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# The Dynamics of Global Sourcing

## Perspectives and Practices

**6th Global Sourcing Workshop 2012**
**Courchevel, France, March 2012**
**Revised Selected Papers**

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# Lecture Notes
# in Business Information Processing 130

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# Preface

This edited book is intended for use by students, academics and practitioners who take interest in the outsourcing and offshoring of information technology and business services and processes. The book offers a review of the key topics in outsourcing and offshoring, populated with practical frameworks that serve as a tool kit for practitioners, academics and students. The range of topics covered in this book is wide and diverse, and represents both client and supplier perspectives on sourcing of global services. Various aspects related to the decision making process (e.g., asset transfer), learning mechanisms and organizational practices for managing outsourcing relationships are discussed in great depth. Contemporary sourcing models, including cloud services, are examined. Client dependency on the outsourcing provider, and social aspects, such as identity, are discussed in detail. Furthermore, resistance in outsourcing and failures are investigated to derive lessons as to how to avoid them and improve efficiency in outsourcing. Topics discussed in this book combine theoretical and practical insights regarding challenges that both clients and vendors face. Case studies from client and vendor organizations are used extensively throughout the book. Last but not least, the book examines current and future trends in outsourcing and offshoring, placing particular attention on the centrality of innovation in sourcing arrangements, and how innovation can be realized in outsourcing.

The book is based on a vast empirical base brought together through years of extensive research by leading researchers in information systems, strategic management and operations.

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# Organization

Global Sourcing Workshop is an annual gathering of academics and practitioners.

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## The Dynamics of Global Sourcing: Perspectives and Practices

# Analyzing Client Dependence in Dyadic IS Outsourcing Relationships

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**Abstract.** Dependence on an IT supplier is a well-known risk for client companies in IS outsourcing. However, little research efforts have been made to compare both exchange partners' dependencies in an IS outsourcing setting. This contradicts with traditional dependence research which views this concept as a property of a relation and not as an attribute of an organization. A case study of five IS outsourcing relationships provides insights into un-/balanced and joint dependencies in a dyad. To explain variances in client dependence, the dependence construct is broken down into its constituting facets. Besides an information system's importance and supplier's substitutability, spillover effects emerged as an unanticipated third determinant. Originating from other exchange relationships with the IT supplier, these effects can distort the dependence structure in the focal relationship.

**Keywords:** Dependence, power, dyadic, information systems, outsourcing relationships, supplier relationship management, relational governance, multiple case study.

## 1 Introduction

Since the early phases of information systems (IS) outsourcing research, an excessive dependence on a supplier is perceived as a main risk in any outsourcing endeavour from a client perspective (e.g., [1], [2]). The concern of being unable to switch to another IT supplier, the loss of critical know-how, or of being subjected to a dictate of pricing, are only a few of the aspects that clients associate with a strong dependence in IS outsourcing relationships.

Although today's IS outsourcing research has turned towards an exploration of outsourcing relationships between clients and suppliers (e.g., [3]), a thorough analysis of dependence has been largely neglected. Maybe this comes as a surprise, since dependence is seen as a central aspect of client-supplier relationships in other research disciplines. In particular, the often unilateral perspective on client dependence in IS outsourcing research conflicts with traditional research on dependence. The latter suggests to assess both dependencies, client and supplier dependence, in a dyadic exchange relationship in order to draw adequate conclusions [4]. 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 [4]. The opportunity to exercise such a power potential in an unbalanced dependence structure [4], [5], represents a threat for the weaker party's business performance (e.g., [2], [5]). 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.

To bring forward dependence research in our domain, this paper attempts to contribute in two ways: First, we will transfer common principles from traditional dependence research to explore the dyadic aspect of dependence in IS outsourcing relationships. This step will provide valuable conceptual and empirical insights which could not been obtained when addressing only one side of the dyad. Second, we derive determinants and influencing factors to conceptualize client dependence. This conceptualization will help to better explain and influence a specific level of client dependence.

Thus, this work will contribute to outsourcing relationship research, since prior research has acknowledged that dependence pertains to the 'behavioural dimension' [6], [7] or to the 'attributes' [8] pervading the working atmosphere of an IS outsourcing relationship. Furthermore, it adds to the field of 'relational governance', i.e., the softer practices associated with managing client-supplier relationships [2]. Combined with findings from reference disciplines, dependence can be seen as a 'contextual' variable and thus, as antecedent of the relational governance facets, like trust, commitment and conflict [5], [8], [9].

The remainder of the paper is organized as follows: The next section introduces the topic of dyadic dependencies and refers to related theories. With a description of our empirical study design, we illustrate our chosen research approach. Subsequently, we present the findings from our multiple case study of five outsourcing relationships. This article closes with a discussion of findings, limitations and possible directions for future research.

## 2      Theoretical Background

### 2.1      Dyadic Dependencies in Exchange Relationships

Contrary to IS outsourcing research, dyadic dependencies have received greater attention in other research disciplines, such as purchasing and supply management as well as relationship marketing [5], [9]. Many contributions in this field have been inspired by the seminal work of Emerson [4], 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". Referring to Emerson [4], Frazier [10] described a party's dependence in a dyadic relationship as the "need to maintain the relationship in order to achieve desired goals".

Scholars in reference disciplines successively investigated the mutual nature of dependence. This has led to the distinction of two constructs, namely joint dependence, i.e., the sum of two organizations' dependencies on each other, and

dependence asymmetry, i.e., the difference in the dependencies on each other [5], [11]. Researchers have used both constructs to measure the impact of dependence on e.g., relationship quality and the involved partners' performances in an exchange relationship. High joint dependence usually shows positive outcomes due to a mutual desire to maintain the relationship and e.g., higher levels of joint action, commitment and trust (e.g., [5], [12]). In contrast, dependence asymmetry has been shown to lead to decreasing trust and commitment as well as increasing conflict [12]. These constructs were also embedded in larger causal models to investigate their interplay with further antecedents of relationship quality and business performance (e.g., [9]).

## 2.2    Theories to Explain Dependence

Several theories can explain the emergence of dependence in exchange relationships. Reference disciplines primarily use resource dependence theory [13], transaction cost economics [14] and social exchange theory [15] when addressing dependence.

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 [13].

Transaction cost economics (TCE) deals with the comparison of production and transaction costs to achieve economic efficiency [14], [16], [17]. Transaction costs are defined by Williamson [14] 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 influencing the efficient governance form is the level of specific assets. Heide and John [18] 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". Because of their specifity, these assets are non-redeployable in other exchange relationships and are assumed to create dependence for the investing party [18].

Social exchange theory (SET), originally developed to investigate interpersonal relations [15], has also been used to study dyadic relationships between organizations [19]. 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 [15]. If a firm obtains outcomes from an exchange relationship that exceed those available from alternatives, its dependence on the current partner increases [15], [19]. Even though, dependence arises here from more positive conditions [20].

Besides these three theories, another related perspective but rarely explicitly mentioned, is the switching costs perspective (see e.g., [5], [21]). The term 'switching costs' (SC) is often used to describe the costs incurred by a substitution of a supplier [18], [21], [22]. 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" [23]. Switching costs thus also address barriers to switching that create dependence on a current exchange partner.

The presented theories yield insights regarding the underlying determinants of dependence and will further be used to develop an integrated view on dependence in IS outsourcing relationships.

## 3      Research Approach

### 3.1      Research Design

With our aim to thoroughly investigate client dependence within a dyadic outsourcing arrangement, we applied the case study method [24]. More precisely, this study follows an inductive research approach to reach predominantly exploratory conclusions [24]. Recommendations and guidelines for case study research [24], [25] were considered to enhance the rigor of this study.

A single research site was chosen with the IT organization of a large-scale enterprise (over 40.000 employees) operating in the passenger transportation sector. For reasons of anonymity, we will refer to this organization as TRANSPORT in the following. 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 [24] for a number of other client companies [26].

Together with two contact persons directly reporting to the top-level management of TRANSPORT's IT organization, IS outsourcing relationships to differing suppliers were screened. The contractual relationships, i.e. cases, were chosen for enabling a literal and theoretical replication logic [24]. As a prerequisite it has been requested that the supplier is involved in the development and/or maintenance phases of one of TRANSPORT's information systems. In this way, we ensured that the basic settings were the same in each case in order to receive a rather complete picture of influencing factors of dependence (literal replication). For theoretical replication, we aimed to include different levels of dependence asymmetry/symmetry to see how variations in the determinants influence the overall dependence. It was ensured that client as well as supplier dependence was estimated to vary, i.e., being high or low, in the respective cases. This initial evaluation was based on the gatekeepers' perceived dependence of the client and supplier side. The procedure resulted in five IS outsourcing relationships which form the unit of analysis (see Table 1).

**Table 1.** Overview of cases

|  | Case 1 | Case 2 | Case 3 | Case 4 | Case 5 |
|---|---|---|---|---|---|
| Description | *"Sales Platform"* | *"Self-Service Platform"* | *"Client Core Service System"* | *"CRM Platform"* | *"GUI for Customer Service"* |
| Supplier description (app. values) | global presence, 400,000 employees, revenue 79 billion EUR | presence across Europe, 1,300 employees, revenue 150 million EUR | global presence, 10,000 employees, revenue 2.5 billion EUR | intern. presence, 500 employees, revenue 200 million EUR | in-house provider, global presence, 3,000 employees, revenue 600 million EUR |
| Contract period | 2009-2015 | 2009-2011 | 2005-2020 | 2008-2020 | 2011-2015 |
| Contract type and volume | usage-related, app. 20 million EUR | framework contract, 1,7 million EUR | framework contract, 400 million EUR | fixed price volume, n.a. | fixed price, > 10 million EUR |
| Likelihood of contract extension/ expected period | high (80%), 2020 | n.a. | high (90 %), 2030 | medium (60%), 2025 | low (5 %), 2016 |
| Relationship start | 2000 | 2009 | 1989/90 | 2008 | 2001 |
| Outsourcing degree (2011) | 71,5 % | 26,7% | n.a. | n.a. | 75,2% |
| Current phase in IS lifecycle | maintenance | end of development (transition) | development/ maintenance | develop-ment | maintenance, supplier transition |

## 3.2    Data Collection and Analysis

The study started with a screening of company documentation that provided background information of the five contractual relationships. More precisely, it entailed details about the considered IS, engaged suppliers as well as involved people in the five distinct units within the client's IT organization. From that list, several representatives agreed to participate in our study. Finally, up to three interview partner were respectively involved in the research.

In total, we conducted 10 face-to-face interviews with 12 interviewees across the five cases (see Table 2). The experts had several years of experience in the area of IS outsourcing and held different positions in TRANSPORT's IT organization. The interviews were based on a short questionnaire and 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 were queried. Next, an estimation of the client and supplier dependence was questioned along with an explanation and an assessment whether the dependencies were balanced or not. This was followed by a discussion of influencing factors, and their interplay as well as the consequences of low and high dependencies. 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 2.** Overview of interviewees across cases

|                         | Case 1 | Case 2 | Case 3 | Case 4 | Case 5 |
|-------------------------|--------|--------|--------|--------|--------|
| Division manager        | -      | -      | -      | 1      | -      |
| Team member             | 1      | 1      | 1      | -      | 1      |
| Team / project manager  | 2      | 1      | -      | 1      | 1      |
| Contract manager        | -      | -      | 1      | -      | 1      |
| *Subtotal*              | *3*    | *2*    | *2*    | *2*    | *3*    |
| *Total: 12 interviewees in 10 interviews* | | | | | |

Altogether, the interviews lasted over 13 hours and produced 257 pages of text after transcription. On average, one interview took approximately 80 minutes. The text was then encoded and structured using a QDA (qualitative data analysis) software. The coding procedure was undertaken as follows (based on [27], [28]): A coding list was initially developed by two researchers. During the coding process still omitted codes were added to the list after agreement. The transcribed interview data revealed a large set of factors or codes influencing client dependence. The factors were then iteratively regrouped, aggregated and redefined in order to develop an adequate causal map. Different streams of literature and theories were used to facilitate the causal mapping and raising the conceptual level of our work [29]. Within this analysis step, the main tasks were the separation into direct and indirect influencing factors, as well as to avoid an overlapping of factors (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 [27].

## 4       Case Study Results

### 4.1     Dyadic Dependence Structure

To determine the client's dependence and power positions across the respective outsourcing relationships, we queried the client's perceived dependencies, i.e., own dependence and the perceived supplier dependence. Dependence was respectively measured by three reflective items. Based on these values, we created a dependence

map [22], [30] as shown in Fig. 1. The abscissa shows the client's self-perceived dependencies, ranging from low ([0-0.33[), over medium ([0.33-0.66[) to high ([0.66-1]). Similarly, perceived supplier dependence is shown along the ordinate. The corresponding numerical values are shown in Table 3.
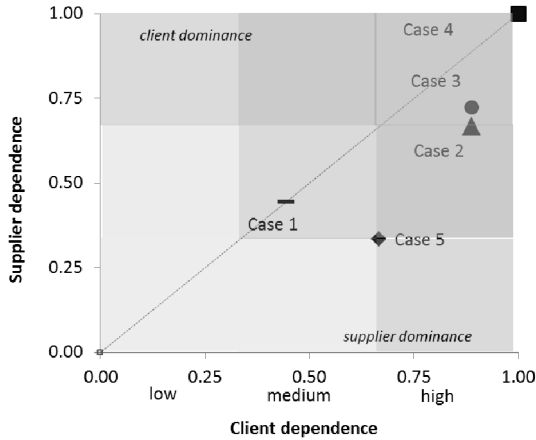


**Fig. 1.** Dyadic dependence map

From a client's viewpoint, the dependence map can be analyzed in at least three ways: by degree of client dependence, by relative dependence and by joint dependence. First, the current client dependence ranges from medium, in case 1 (0.44) to high, 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 [4], 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. Thus, joint dependencies are medium to high which also results from the mostly medium-to-high levels of supplier dependence.

Taken together, with the help of the two suggested constructs by traditional dependence research, relative and joint dependence, clients and their IT suppliers can be adequately positioned in a dependence map. In particular, this allows a more differentiated look at dependence in IS outsourcing relationships. However, these constructs cannot explain how specific levels of client dependence arose or how they can be actively influenced. For this purpose, the next section aims to conceptualize client dependence addressing crucial determinants and influencing factors.

**Table 3.** Assessment of different types of dependence from clients' perspectives

|  | (Self-perceived) client dependence (1) | Client's perceived supplier dependence (2) | Relative dependence (1)-(2) | Joint dependence (1)+(2) |
|---|---|---|---|---|
| Case 1 | 0.44 | 0.44 | 0.00 | 0.89 |
| Case 2 | 0.89 | 0.67 | + 0.22 | 1.56 |
| Case 3 | 0.89 | 0.72 | + 0.17 | 1.61 |
| Case 4 | 1.00 | 1.00 | 0.00 | 2.00 |
| Case 5 | 0.67 | 0.33 | + 0.33 | 1.00 |

## 4.2    Conceptualization of Client Dependence

Reviewing literature in the field of dependence reveals that slightly differing perspectives on an organization's dependence evolved over time. Jacobs [31], 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 a product or service into account. However, the mere number of existing alternative sources 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" [18]. 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 [18] or when the outcomes associated with alternatives are lower than those in the current relationship [19], 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* ([13] following [21]):

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

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 [21]. 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 [13], [21].

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 Fig. 2, 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*) for the company. It is low, if, for example, a relatively unimportant back-office process is concerned, or very high, if the specific 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 (eventually with an alternative IS) is considered. While not focused on in our study, apart from an in-house alternative (subsidiary company), backsourcing could also represent a supply alternative.
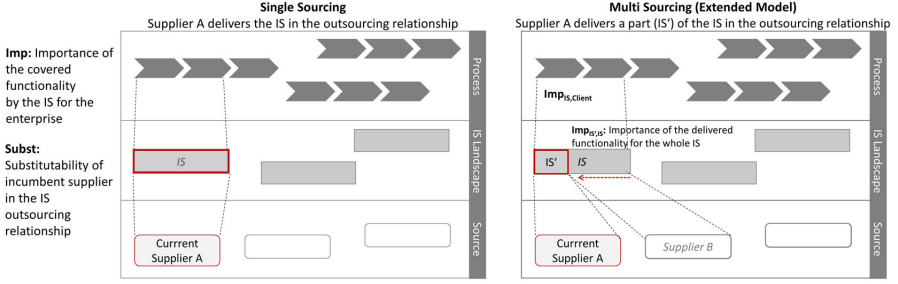


**Fig. 2.** Framework of client dependence determinants

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.

As mentioned above, we focused on perceived dependence, e.g., client's self-perceived dependence, rather than on actual dependence in this study. 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:

$$\text{Perceived dependence (Client on Supplier)}_{IS'} = f\left(\left(Imp_{IS,Client} * Imp_{IS',IS}\right), \left(1 - Subst_{Supplier,IS'}\right)\right) \quad (2)$$

$$f'\left(Imp_{IS,Client} * Imp_{IS',IS}\right) > 0 \text{ and } f'\left(1 - Subst_{Supplier,IS'}\right) > 0$$
$$\text{and } \min f = f(0,0) = 0 \text{ and } \max f = f(1,1) = 1 \quad (3)$$

The consideration of dependence as a composite construct of the two determinants, importance and substitutability, is helpful, but fails short when a more detailed analysis is needed. In particular, what are the salient underlying facets of the two determinants? In the following, we will decompose the two determinants into dependence facets which client companies should carefully monitor. Thereby, we will draw on our case study interviews as well as on the different general theories described in section 2.2.

### 4.2.1     Importance

The predominant dimensions of 'importance' 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 [21]. The proportion of total purchasing volume is one way to express the relative magnitude accounted for by a supplier [5]. For example, on IS level, it is conceivable that the relative magnitude could be well assessed by comparing single vs. multi-sourcing options. 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*

*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 [4], the relationship's contribution to the focal company's desired goals needs to be considered. Next to relative magnitude, Pfeffer and Salancik [13] therefore introduced 'criticality' which reflects "the ability of the organization to continue functioning in the absence of the resource". Bourantas [21] 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 [12], [18], [32]. In IS research, IS importance is more difficult to assess and different value categories have been discussed [33–35]. 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., [36]).

> "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
> "I think, we are in a relative bad dependence position. One reason is, that the application is critical for our business." Case 5

### 4.2.2    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 [23], [37] 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 [13]. 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., [5], [38]). 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
> "I think, at the moment we are fully dependent on our supplier. […] Second, there are not many companies on the market which offer such a CRM application." Case 4

*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*
> *"But 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 – resources are no longer available for the maintenance of the current system." Case 1*

*Performance uncertainty of alternative suppliers*

A further barrier arises from the uncertainty associated with the performance level of alternative suppliers [23]. In IS outsourcing, the supplier's capability and performance level is an important success factor [39]. 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*
> *"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*

*Sunk costs*

Sunk costs encompass the client's perception of non-recoverable time, money and effort invested in the outsourcing relationship [23], [37]. Sunk costs are seen as irrelevant according to classical economic and normative principles of economy [40]. 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 [40], [41]. 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 [42]. In an environment of high asset specifity, a significant amount of transaction-specific sunk costs of a non-redeployable variety is present [40]. Typical sunk costs in IS outsourcing relationships might be past costs for training employees for a specific IS [43] or development costs, when the client does not possess the intellectual property rights 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*
> *"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*

*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 [20]. These considerations trace back to SET [15], 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 [19]. Benefits lost upon contract dissolution are seen as crucial components of the substitutability construct [23], [37] 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*
> *"This supplier offers us many more functionalities. We can also exploit synergy effects that another supplier could not provide us." Case 3*

*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 [23], [37]. 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*
> *"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*

*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 eventually 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 can 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*
> *"The code volume increases and when I like to switch the supplier, the required time for a new supplier to take-over increases." Case 2*

### 4.2.3 Spillover Effects

So far, we have encountered nine different underlying facets of importance and substitutability which are summarized in Table 4. 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 [44]. 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*
> *"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*

**Table 4.** Underlying facets of the client dependence construct

| Higher-level factor | Influencing factor | Description | Related concept |
|---|---|---|---|
| $Imp_{IS,Client}$ $Imp_{IS',IS}$ | 1 Relative magnitude (+) | Share of magnitude, e.g., purchasing volume, related to the IS/IS'. | RDT |
| | 2 Relative value contribution (+) | Degree of value contribution of the covered functionality (by the IS/IS') in relation to relative magnitude. | RDT |
| *Subst.* | 3 Supplier alternatives (+) | Number of supplier alternatives for the IS/IS' or a similar IS/IS'. | RDT |
| | 4 Evaluation and selection efforts (-) | Perception of time and effort needed for evaluating and selecting a new supplier. | SC/TCE |
| | 5 Performance uncertainty of alternative suppliers (-) | Uncertainty or perception of risk surrounding the performance of alternative suppliers. | SC/TCE |
| | 6 Sunk costs (-) | Perception of non-recoverable time, money and effort invested in the outsourcing relationship. | SC/TCE |
| | 7 Lost benefits (-) | Perception of benefits resulting from the current relationship and which are lost upon contract termination. | SC/SET |
| | 8 Post-selection client side costs (-) | Perception of time, effort and financial outlays needed to conduct the switching process on client side. | SC/TCE |
| | 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'). | SC |
| *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. | / |

# 5 Conclusion

## 5.1 Discussion of Key Findings

The management of client-supplier relationships in an IS outsourcing setting has received increasing attention in research as well as in practice (e.g., [3], [26], [45], [46]). As an important relationship aspect, this paper took a closer look on dependence between clients and their IT suppliers.

Herein, general theories about dependence were transferred to the context of IS outsourcing relationships. Based on Emerson's conceptualization [4], a framework of dependence as a composite construct of an information system's importance and the substitutability of the IT supplier was derived. Furthermore, resource dependence

theory, transaction cost economics, social exchange theory as well as the switching cost perspective were integrated to precisely describe client dependence in IS outsourcing relationships. The transfer of these theories was facilitated with a multiple case study approach which included a series of interviews on client side. As a result, 10 underlying factors were retrieved to assess client dependence in our domain.

As an unanticipated aspect 'spillover effects' emerged from our explorative study that did not fit in the previous two categories of resource importance and substitutability of its source. Dissatisfaction with a client's decision to terminate an exchange relationship can spill over to other exchange relationships and lead to a transfer of an untapped power potential to the focal relationship. Case study findings suggest that spillover effects have an influence on client's self-perceived dependence. This factor might add to an explanation why clients, although able to substitute a given supplier in an exchange relationship, do not switch. They might face undesirable consequences (e.g., price increase) in other exchange relationships with the same supplier. Spillover effects are expected to be equally present on the supplier side in a dyad.

Apart from the conceptualization of client dependence in IS outsourcing relationships, we adopted two central constructs, relative and joint dependence, from reference disciplines. This allowed us to adequately capture the respective dependence structures and to identify power potentials in the five cases. In our case selection, the dependence structure was either favouring the supplier side or was balanced – at least from the client's perception. It has to be noted, though, that not only client dependence but also supplier dependence can be high in IS outsourcing arrangements as being partly the case in this study.

## 5.2     Limitations and Future Research

This study reveals several directions for future research, but faces also some limitations. While we relied on multiple cases and applied a multi-informant approach, there is still the need for future studies to investigate the presented concepts for the variety of IS outsourcing relationships. In particular, a limitation might be that, despite five distinct units within an IT department, only one client organization was involved in our study. Future research providing additional case studies in other industries is seen necessary and valuable, especially if dyadic data, i.e. on client and supplier side, is collected. Furthermore, comparing a supplier's perspective on mutual dependencies with a client's would also be of great interest. In addition, a detailed investigation of supplier dependence could equally contribute to research and is therefore planned by the authors in the near future. Since dependence is not only a dyadic, but also a dynamic concept, taking a non-static perspective would further add to our understanding. An initial qualitative system dynamics model [47] was recently developed by the authors [48], but further research is here needed to support companies to manage dependencies over the short- and long-term. Future studies in IS outsourcing relationships could use the presented concepts of dyadic dependencies, relative and joint dependence, to explore their various consequences on e.g.,

relationship performance. To further enhance the generalizability of our findings, a larger empirical study is needed. In particular, the exact composition of the dependence construct, i.e., the weightings of the presented determinants, is still to be determined for IS outsourcing relationships.

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# How Do Planned and Actual Interaction Structures Differ in Global Outsourcing Arrangements?

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**Abstract.** How and why do actual interaction structures in global outsourcing arrangements differ from those originally planned? We use a social network perspective to analyze the structure of social interaction networks among operational staff and management of vendor and client firm in an outsourcing arrangement. We apply a case study approach to understand which interaction structures appear and whether they are in accordance with those structures formally defined in the outsourcing governance. We found that real interaction often differs from the plan and we provide theoretical explanations for understanding these deviations, thus contributing to the understanding of outsourcing governance and outsourcing relationship management.

**Keywords:** IT Outsourcing, interaction structures, social network analysis, outsourcing governance.

## 1 Introduction

Inter-organizational and international collaboration are common in most day-to-day working relationships in general and in the IT domain in particular. Offshore outsourcing arrangements are a prevalent instantiation of cross-organizational and international collaboration in the IT domain. Previous research has identified relationship management as an important outsourcing success driver and suggests further research on the role of relationship issues in outsourcing on the individual and team level [1, 2]. Relational issues on the organizational level have been examined by various researchers (e.g., [3, 4]). However, the individual level of outsourcing relationships, focusing on the interactions between vendor and client personnel, has rarely been considered (few exceptions are, e.g., [5–7]), although we all know that any organizational relationship is animated by the people and their interactions. Therefore, the investigation of inter-personal relationships promises to be a rich field for uncovering important factors of outsourcing success [8, 2]. In this context, we need to understand which interaction structures between client and vendor are successful (and why they are successful) in order to validate them as best practices. Some researchers highlight the role of social relationships between client and vendor, e.g., to address cultural issues in offshoring scenarios [9] or as driver for tacit knowledge exchange between

client and vendor [10]. However, none of these works focuses on the interaction structures themselves and how the "right" structures can be achieved and maintained. Formally defined processes, such as boundary spanning [11] or certain control mechanisms [12]  provide an initial framework for interaction in outsourcing relationships, albeit the actual interaction structures in practice develop over time and often deviate from the originally intended ones. Therefore, we need to explore: *How and why do real interaction structures in global outsourcing arrangements differ from those originally planned? What are the resulting consequences*? In order to find answers for this research question, we conduct a rich case study by examining the cross-organizational interaction between the employees of a global software company and an Indian outsourcing vendor, taking a social network perspective on the client-vendor interface.

We provide some background on offshore outsourcing in the next section. Afterwards, we present our case study methodology. The subsequent section introduces the case study context and describes the specific challenges of the analyzed outsourcing relationship. We then present the adjustments of interaction structures in the case. Finally, we discuss the implications of the case study findings and conclude with an outlook on further research.

## 2    Global Collaboration in Outsourcing Situations

Offshore outsourcing refers to an organization turning over certain of its activities to an external vendor located in another country, often in overseas [13]. Our research focuses on the outsourcing relationship, which is defined as *"an ongoing, long term linkage between an outsourcing vendor and customer arising from a contractual agreement to provide one or more comprehensive IT activities, processes, or services with the understanding that the benefits attained by each firm are at least in part dependent on the other"* [14].  In the offshore outsourcing context, the actors involved need to overcome organizational as well as geographical and cultural boundaries in their interaction [15], which makes it a comparably complex and intense B2B relationship. Social relationships help to overcome these boundaries, e.g. by "embedment" of offshore personell to improve the information flow between client and vendor [10] and by addressing cultural issues potentially driving "vendor silence" [9].

Only few works have shown that different interaction structures in outsourcing relationships have varying advantages and disadvantages, depending on the context (e.g., [5], [15]). For instance, a centralized interaction structure [5] vs. a decentralized interaction setup between vendor and client [15] exhibit different potentials and shortcomings from vendor and client perspective. In social network terms, these interaction setups differ in the density of the network at the client-vendor interface. Network density refers to the *"the proportion of links present relative to those possible"* [16]. The density at the interface between client and vendor lies on a continuum between a centralized interaction setup, where all interaction is channeled through one "gatekeeper" [17], and a decentralized setup, which equals a fully interconnected network with high density.

# 3      Methodology[1]

The focus of our research is the evolution and adjustment of complex interaction structures between people at the client-vendor interface. The objective is to understand how and why the actual interaction structures deviate from initially planed processes. Following Yin [19] we therefore conduct an exploratory case study, which allows us to elicit rich data on how communication happens, why certain interaction structures do appear and which effects they have. We use a single case design because we want to reveal new ideas and can include a longitudinal perspective from the recollections of the interviewees. The case study focuses on interaction structures and social exchanges in outsourcing relationships. In preparation of the case study, we defined our research questions and data collection methods in a research design as suggested by Yin [19]. The unit of analysis in our case study is the interface between client and vendor employees in an IT outsourcing arrangement.

**Table 1.** Case study instruments

|  | Participants/ Explanation | Goal | Number | Dura- tion |
|---|---|---|---|---|
| **Pre-case discussion** | Client team lead (primary contact) | Understand background; obtain access to additional data sources (not recorded) | 1 | ~1 hour |
| **Ground setting interview** | Responsible managers on client side (one was re-placed during the data collection phase) | Understand context and history of outsourcing arrangement; define scope of case study; collect case data from interviewee | 2 | Ø 52 minutes |
| **Case inter-views** | Vendor and client team members having direct contact to the other party | Build hypotheses on specific network structures, understand role and influences on social exchanges | 15 (2 inter-viewed twice) | Ø 43 minutes |
| **Question-naire** | Additional vendor team members | Obtain information from partici-pants not available for interviews | 4 | 15-20 minutes |
| **Additional data** | Meeting participant lists, organizational charts | Prepare interviews; validate information | n/a | n/a |

We obtained the core data from semi-structured interviews following open-ended questions, which allows to deeply understand the participant's experiences, views and their context [20]. Table 1 gives an overview of the case study instruments used for data collection. We conducted the interviews with people involved in the investigated outsourcing relationship on client and vendor side, which yielded a dual perspective on the outsourcing relationship and the client-vendor interface.

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[1]  A first outline of the methodology applied for gathering the data used in this paper was presented at the International Research Workshop on IT Project Management (pre-ICIS workshop) [18].

We conducted 17 phone interviews with 15 interviewees between October 2010 and March 2011. The interviewees' positions ranged from operational level to middle management (see details in Table 2). On average, the interviews lasted 44 minutes, providing us with 12.5 hours of interview material and 197 pages of interview transcripts, in total. The social network data was gathered from each interviewee's perspective. The resulting individuals' ego network data was combined in order to obtain a picture of the overall social network. For each interviewee, we focused on the team they belong to and their relationship to fellow team members to scope the network. The network data from the interviews was complemented by a list of attendees to regular meetings and a questionnaire filled by four additional vendor team members, who where not available for interviews. Based on this data from multiple perspectives, we reconstructed a comprehensive view on the interaction structures around the client-vendor interface.

**Table 2.** Overview of interview partners (q = questionnaire-based data collection)

| # of interviewees | Management level | Department heads | Operational level (team leads and team members) | Total |
|---|---|---|---|---|
| Client | 3 | 2 | 5 | 10 |
| Vendor | 2 | 1 | 2 + 4 q. | **5 + 4 q.** |
| **Total** | **4** | **4** | **7 + 4 q.** | **15 + 4 q.** |

We recorded and verbatim transcribed the interviews, followed by an open coding procedure using MAXQDA [21] to explore the patterns of interaction structures and their evolution. In the interview transcripts, we coded

- Descriptions of interaction structures,
- Adjustments or evolution of interaction structures,
- Positive and negative criticism of interaction structures,
- Topics mentioned by the interviewees in the context of or as reasons for changes,
- Characteristics of the outsourcing relationship.

During the coding process, we thus identified how and why the interaction structures (were) changed over time and how this helped to address the challenges of the outsourcing arrangement.

## 3.1     The Case: Outsourcing a Global Firm's Data Processing Activities

The subject of our case study is the outsourcing relationship between GlobalClient, a global software company, and their IndianVendor, a rather small outsourcing vendor specialized in data management services and headquartered in India, but with service centers in India, China, and Eastern Europe. The goals of the outsourcing contract include cost reduction, reduction and consolidation of multiple service contracts with various vendors, and improved quality and consistency in data management services. GlobalClient's unit managing the outsourcing relationship is the data management

unit (DMU), which provides and maintains the data needed by the worldwide sales units. Their tasks include optimization of data management processes, manipulating data in customer relationship management, revenue management and sales commissions systems and matching data from different systems. GlobalClient has outsourced several operational DMU tasks to IndianVendor. The operational data management tasks mainly originate from service requests (SRs) from the sales units. Besides the handling of SRs, the DMU permanently works on simplifying and automating their processes and on improving their service offerings to the business. The client team members jointly take care of this part of the DMU activities, sometimes supported by IndianVendor[2].
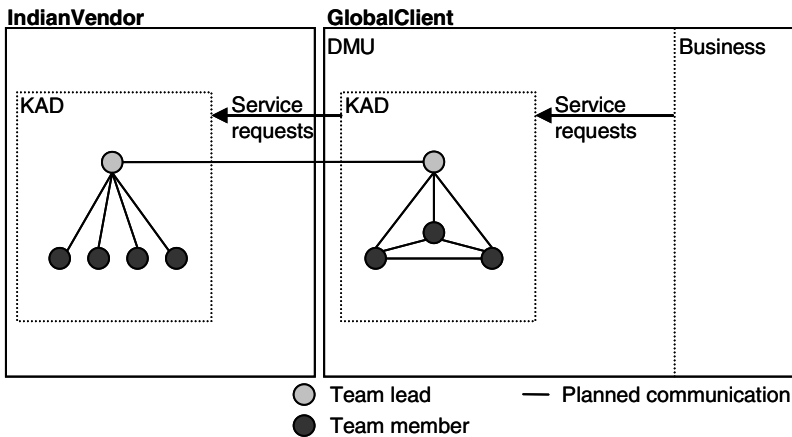


**Fig. 1.** Initially planned interaction structures for one topic (example of KAD)

Within DMU, we analyzed two subgroups: the teams responsible for the key account data (KAD) and for customer segmentation (CS) data. Each team on client side consists of one team lead and several team members in different countries. The counterpart on vendor side is a similarly structured team for each topic (KAD, CS), consisting of a team lead and a group of team members, as well. The interaction structures, as they were initially planned to be established between vendor and client for a certain topic (KAD as representative example) are illustrated in Figure 1. The standard process starts with a SR sent from business via a ticketing tool (not part of this analysis). In the DMU, either a client team member handles the request or forwards it to IndianVendor via the ticketing tool. Depending on the time zone and the resource allocation by the vendor team lead, a vendor team member from India, Eastern Europe or China handles the request. The team leads coordinate the work of KAD teams on vendor and client side, the vendor team lead being the "single point of contact" for

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[2] Within data management, GlobalClient is also supported by 3rd party vendors who work on GlobalClient's sites in a "body leasing" model. As they are fully integrated into GlobalClient's team and have usually worked there for a long time, we make no difference but treat them as client team members in the following.

her topic from client perspective. Coordination includes, e.g., the forecast or resource requirements as well as the alignment of processes to be handled by the vendor. For the sales unit as eventual service recipient the outsourcing scenario is intended to be completely transparent. The interaction between IndianVendor and GlobalClient is based on the service requests and knowledge exchange for further development of the services. Client team leads assign requests to vendor team members and client team members assist when needed by sharing their more advanced knowledge of processes and the requests' background.

## 3.2    History and Current Situation

GlobalClient's DMU has gone through several stages of reorganization in the past years. In the beginning, all data management activities took place in the different sales units of the business organization. In 2007, the data management activities were moved to the IT organization, but remained decentralized. At this point, an international vendor supported GlobalClient to prepare the transition to a shared services model with a centralized DMU. In 2009, the current, centralized model was launched, with IndianVendor and two vendors in Europe and the US. Language barriers and skepticism on the business side were the reasons not to move all vendor operations to India at once. Internally, GlobalClient organizationally integrated all local data management teams into one business unit: the DMU. However, geographically this team of around 30 people was and is still dispersed worldwide. In the current stage, which we cover in the case study, IndianVendor has taken over the operations from the European vendor after establishing a subsidiary in Eastern Europe in mid-2010. The contract between GlobalClient and IndianVendor has been growing steadily over the past years, starting with around 20 vendor employees growing to almost 90 vendor employees serving GlobalClient today. GlobalClient currently plans to move the US operations to IndianVendor, thus further increasing the business volume in the near future. During these reorganization activities, the inter-personal interaction structures between the client and vendor teams have substantially changed compared to the initially planned structures in Figure 1. Specific requirements of the outsourcing setup such as remote collaboration pose challenges that drive the evolution of interaction structures. In the following, we describe the major challenges the GlobalClient has faced and how they influenced the interaction structures.

## 3.3    Challenges in the Outsourcing Relationship

This section examines three core challenges, which affected the investigated outsourcing relationship: global dispersion, vendor turnover and need for business understanding. GlobalClient's DMU personnel is **spread globally,** as Table 3 exemplifies by listing the interviewees' locations. Most DMU employees had been working in data management before the shared service model was set up and thus simply have stayed in their home countries, now specializing on certain topics. Especially in comparison to the previous decentralized model, the IndianVendor account manager sees a challenge for their Global client:

*"It's a mixed thing. Earlier, […] if I was a stakeholder in GlobalClient, I would have had people in my team who were sitting right next to me and I could get work done through them. Now, I do not have a local team but there is one central [team] that I can send my request to and it gets done. So, it's a mental change, it's a change of comfort. You don't have that same level of comfort compared to having people sitting next to you anymore." (IndianVendor's AccountManager)*

**Table 3.** Interviewees' locations

| Interviewees' locations | Management | Department heads | Key account data teams (KAD) | Customer segmentation teams (CS) |
|---|---|---|---|---|
| **GlobalClient** | UK, Germany, France | Australia, Brazil | France, Argentina | South Korea, UK |
| **IndianVendor** | India (2 interview partners) | India | India | India |

Since GlobalClient's sales unit is also globally dispersed, the intent is to keep the geographically distributed DMU team for cultural and organizational reasons (e.g., 24/7 support and support in Asian countries). Therefore, even the client team members by themselves work together in a remote setup, e.g., on process improvements. Additionally, the external vendor's staff is also distributed over three locations (India, China and Eastern Europe). GlobalClient's former vendor manager of the outsourcing contract with IndianVendor summarizes the challenges of this high dispersion mode:

*"It's tough because multiple companies are involved, because the world is changing everyday, because we are all remote, not all sitting in the same room but sitting in different time zones. We all come from different cultures. So all of that makes it a challenge and a very challenging atmosphere, as well." (former vendor manager at GlobalClient)*

A member of the CS team explains why this remote setup can be difficult for everyday work in the operational teams, particularly for conveying the business background to the vendor team members:

*"It's difficult when you're sitting in a country far away and you've got a process flow to follow – really understanding why that process flow is so important to the business of GlobalClient. That's the big issue which is always difficult in an outsourced model." (CS team lead at GlobalClient)*

Once or twice a year, GlobalClient's DMU employees meet personally in a joint summit to get to know each other better. However, there is no comparable meeting on the vendor side bringing together vendor team members from different locations, nor are there any joint physical meetings between client and vendor team members.

Another challenge is the **turnover** of personnel on the vendor side. Being typical for offshore vendors in India, which have problems in retaining qualified people, there is a significant turnover of people, who get hired by competitors as they want to

further develop in their job. However, IndianVendor claims that they are handling the turnover better than comparable companies:

*"In India, there is an attrition problem. It's not too huge and I think we do very well as compared to the rest of the companies in India. But yes, we do have some turnover in India. And we've seen a little bit in China, in Eastern Europe as well, but […], there is adequate notice period that people give, there is adequate training period that we can train a new person on, so it doesn't really affect GlobalClient. So from a client perspective, they don't notice anything different." (IndianVendor's AccountManager)*

GlobalClient has a very different perspective on this, as the ramp-up of new employees is time consuming and also involves client personnel's time and effort.

*"[…]The reality is that we're investing a lot of our time and money to get IndianVendor people up to speed, with big picture training, coaching – not only for their tasks but helping them to understand what's left, what's right. So the investment of education is pretty high which means that the turnover impact is high as well." (Former vendor manager at GlobalClient)*

The third challenge that showed up in the interview series is the need for **business understanding** on the vendor side. Since IndianVendor operates on SRs from the sales people of GlobalClient, they need profound knowledge about the context of the SRs. The operational staff at GlobalClient expects this business understanding from IndianVendor's employees:

*"[…] they have to understand our business. Having that business knowledge is critical to being able to help us drive forward and to make the process improvements that we want to make." (CS team lead at GlobalClient)*

In the past, GlobalClient's DMU manager identified exactly this aspect of the relationship as important area for improvement:

*"I think having an understanding of our stakeholders in the field and their expectations was where it didn't work so well. We needed to go through quite a solid training program in order to bring them up to the standards necessary in order to be able to deal with our [sales] people." (DMU manager at Global-Client)*

The three challenges described here (global dispersion, vendor turnover and need for business understanding) drive changes in the interaction structures in order to reach effective and efficient collaboration and thus make the outsourcing relationship successful. In the following, we describe how and why the interaction structures have changed in response to these challenges.

## 4    Results: Overcoming the Challenges through Fitting Interaction Structures

As introduced above, the case study focused on two teams (KAD and CS). In this section, we present the actual interaction structures for both and explain reasons for the deviation of the actual structures from the initially planned ones.

## 4.1    Key Account Data Team

The KAD teams have shrunk over the past months due to increased automation of their activities. On IndianVendor side, there is only one data analyst left, while it used to be six in 2010. The client team consists of a team lead and three team members. In contrast to the initially planned interaction model, the actual interaction is less channeled through the team leads but rather involves all client team members. While the KAD vendor team lead is still the defined main contact person on vendor side, called misleadingly "single point of contact" (SPOC), a dense interaction between all members of the vendor and client teams exists. The "SPOC" has a coordinating function in this setup, as the client team lead explains:

*"Normally, he is my SPOC, but to be honest I have a daily call with all [Indian-Vendor KAD] team [members]. […]My relation with the SPOC is more about organizational and planning topics and sometimes a weekly sync and sensing regarding the 'climate' if there are some 'people issues' present. But usually I directly contact the [IndianVendor team members] to get myself the correct feeling." (KAD team lead at GlobalClient)*

A KAD team member further explains how the interaction among the client and vendor team members works:

*"Yes, we do have [direct] interaction with vendor team members. For instance, when they work on reports and something is not clear, they come directly to me asking for assistance […]."(KAD team member at GlobalClient)*

Thus, the dense interaction pattern is mostly directed from IndianVendor to Global-Client to clarify open questions. Reversely, GlobalClient takes initiative when new or changed processes need to be explained. This knowledge transfer is necessary to give the IndianVendor employees an understanding of the business context:

*"From our side, it is more passive. Only if we have a change on any tool or process, we schedule a particular meeting with the [vendor team] members who are concerned with the change and try to explain and give examples, screen shots, demonstrations; everything we can do to make the explanation as clear as possible.[…] From our side, we don't initiate a continuous or daily interaction with the [vendor team] members unless we have something specific to communicate." (KAD team member at GlobalClient)*

This is also supported by the vendor team lead, who acknowledges the open communication model:

*"I would say that it [the interaction structure between client and vendor] is transparent. I don't think there is some channel because everyone is very free. The client team members always say that we are free; if we have any questions, we can contact any person. […] I think it is good. It gives transparency to communication, which is always very beneficial for a business. We obtain a certain level of understanding." (KAD team lead at IndianVendor)*

This dense interaction structure was intentionally promoted through regular joint team calls after it emerged that the initially planned structures were not sufficient to ensure effective collaboration and high service quality. The goal of this revised interaction

structure clearly is knowledge transfer and improving business understanding on the vendor side:

*"We have an official team meeting once a week. Everyone is there [client and vendor team members]. We share best practices: how we can improve the current way of execution. It's a very open sharing session. And in this session I also provide some guidance, because we have to follow some guidance to execute the tasks." (KAD team lead at GlobalClient)*

Additionally, client and vendor team members frequently interact via phone or instant messaging. The client team lead explains how she communicates with client and vendor KAD team members through these channels every day:

*"I have different kinds of contact. It could be an instant messenger discussion, a quick question. 'Hey, I'm not sure about this, how can I resolve it?' So I answer. Sometimes it's quicker and more efficient to have a call, if the team member asks questions." (KAD team lead at GlobalClient)*

Additionally, the KAD vendor team members not only interact frequently with all client team members, but also directly with the business, i.e., people from Global-Client's sales unit who send SRs. This is another adjustment to the initially planned interaction structure, where the outsourcing arrangement should be completely "invisible" for the business. The GlobalClient KAD team lead explains the reason for this and how she supports new vendor team members in this communication:

*"Sometimes, the [SR] is not clear. In such cases, they need to ask for clarification and write an email to get some more information to make sure [they] correctly understand the request.[…] In other cases, they have to send some reminder to the business because we need to get approval before applying the change to the system. The reminder should be polite and gentle because we need to have a very smooth communication with the business. So, at the beginning we provided some standard emails to the vendor and client team members, which they could use as templates for their communication. And now I don't have to prepare these standard emails anymore because they know how to speak to the requestor." (KAD team lead at GlobalClient)*

Due to this direct interaction with the business, the client team members must ensure sufficient business knowledge as background for the vendor team members. The client's vendor manager explains the content and importance of this knowledge transfer:

*"We provided them more insights of specific tools, applications, and toolsets as well as of the business side of GlobalClient because quite often they directly interact with GlobalClient employees from the business side. They need to understand all these calls and the nature of the business and why certain people turn to them with specific requests." (New vendor manager at GlobalClient)*

We can summarize that the KAD team has applied several measures for denser interaction structures than initially planned in order to achieve sufficient knowledge exchange and collaboration efficiency. These include team calls with all team members, allowing or even motivating direct interaction between client and vendor team members, and additional coaching sessions. Figure 2 illustrates the adjusted interaction model between the KAD vendor and client teams.
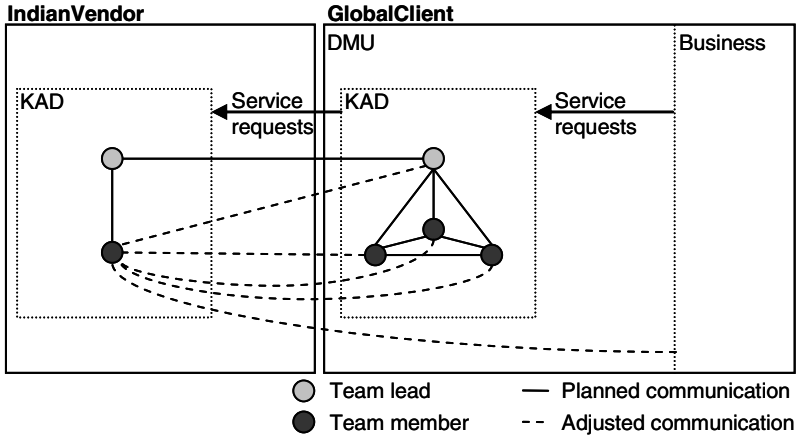
**Fig. 2.** Actual interaction structure in the KAD team

## 4.2    Customer Segmentation Team

The client and vendor CS teams are bigger than the KAD teams because the tasks are less automated and the process improvements are still ongoing to a larger extent than in KAD. The client CS team is divided into three sub-teams, each being similarly structured as the KAD team: a client team lead and 2-4 team members. The supporting IndianVendor team is significantly bigger, consisting of almost 20 team members, coordinated by the vendor team lead. The initially planned interaction structures between IndianVendor and GlobalClient in CS (Figure 3) are identical to the KAD planned structure. The actual structures, however, are also denser than initially planned. Similar to the KAD team, the CS team has a weekly joint online team meeting. In CS, it is voluntary for the vendor team members to participate while the vendor team lead is a mandatory participant:

> *"We have a virtual meeting every week, for about an hour. [In] that meeting, our [client team] members participate and also all [vendor team] members that might be interested. The [IndianVendor] single point of contact (SPOC) is required to attend. Also, if some [vendor team] members want to share very specific issues, surely [they are] very welcome to join this meeting. Usually we have 20 to 25 attendees [including vendor team members]." (CS team lead at GlobalClient)*

In contrast to the KAD team, interaction between the CS client and vendor teams is more channeled through the team leads (besides the open virtual meeting described above), however not as completely as initially planned.

> *"I would say, [the communication] is probably channeled through specific people [but not only through us as the team leads]. Some people that work in my team take a coordination role, too. [...] They are responsible to be the interface towards the [IndianVendor] team, and to be the first point for escalating any issues or to work with those individuals of IndianVendor that got any problems or that are not performing the way they should perform. So there is certainly a relationship at this layer and above that there is the relationship that I have with the vendor team lead." (CS team lead at GlobalClient)*
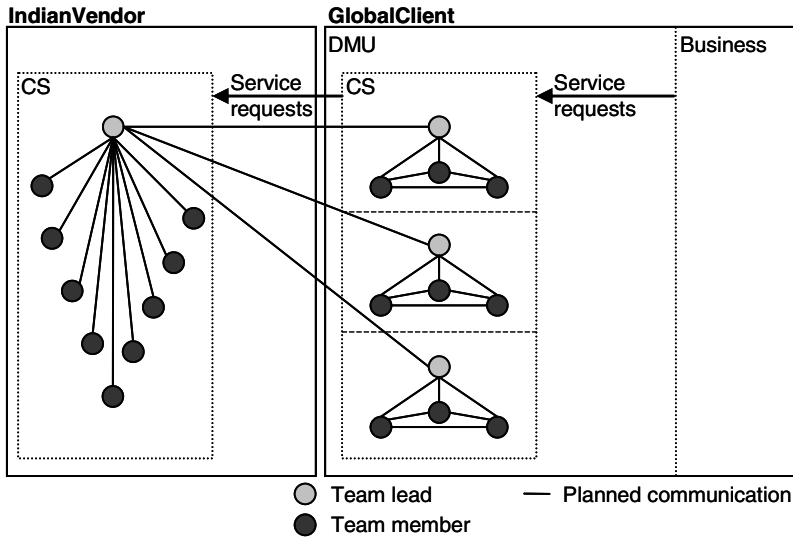
**Fig. 3.** Planned interaction structure in the CS team (illustrative)

Moreover, the client team lead also accepts being contacted by staff from IndianVendor:

*"Anyone [from vendor CS team] who needs to contact me is free to do so. Somehow, we are an open society: anyone can call me or email me; that's okay. However, the important thing is that the [IndianVendor] SPOC is the main person who is responsible for CS on the vendor side." (CS team lead at GlobalClient)*

The vendor team lead supports the perception that the vendor team members can contact the client team members whenever necessary:

*"If a team member at GlobalClient and a team member at IndianVendor have to share a piece of information, they are very free to talk to each other directly. They do not need to follow the official channel. […] They can directly talk to each other without restrictions." (CS team lead at IndianVendor)*

Given the size of the CS teams, they have set up a coaching model for better knowledge exchange. The coaching takes place both within the vendor team and across firm borders from client to vendor team.

*"Most of the time the IndianVendor team works well and independently, but in case of new processes, when there is new work coming from GlobalClient, our analyst will act as mentee and a GlobalClient team member will be the mentor." (CS team lead at IndianVendor)*

Across the firm borders, the coaching model involves different groups having regular coaching calls. These calls are led by a client team member and each vendor team member participates in a call every week.

*"We have subject matter experts [client team members] for particular topics, who are supporting us and helping our analysts to understand it all. It is like an open forum, where there is one subject matter expert from GlobalClient and 4-5 of my*

*team members will participate. In that forum, they can share their concerns, they can openly ask their questions [while the subject matter expert supports them]." (CS team lead at IndianVendor)*

The vendor team members usually attend the same forum every week, but they can rotate across the groups in order to get to know each other better and thus improve their collaboration:

*"We decided that from time to time the vendor team members will be moved between the groups so that they know each other well. We think that helps in their work." (CS team member at GlobalClient)*

The client team member also explains how the closer collaboration helps in her team's daily work:

*"The closer the approach we have with each other and the more communication we have, […] the better their work will be. We [the client team members] have understood that we have to care about how they [the vendor team members] feel, how they do, or how they act. Being the vendor doesn't mean that they just deliver their tasks and nobody cares of how they did it. These conference calls and the collaboration help in every aspect. They help them to do their work properly and effectively, and it helps us to see how everything is going on." (CS team member at GlobalClient)*

Similar to the KAD team, the vendor team members from the CS team also interact directly with the sales people, for clarification of SRs:

*"So in case they need more information about particular SRs, they can and do directly interact with the requestors from business side, asking for the necessary information." (CS team lead at IndianVendor)*

We can summarize that the CS team has made similar adjustments to the initially planned structures as the KAD teams with joint team meetings and establishing an open interaction structure between the client and vendor team members. Additionally to the KAD scenario, they have introduced the coaching model with formal online sessions to exchange experiences. Figure 4 shows the actual interaction structures of one CS sub-team.
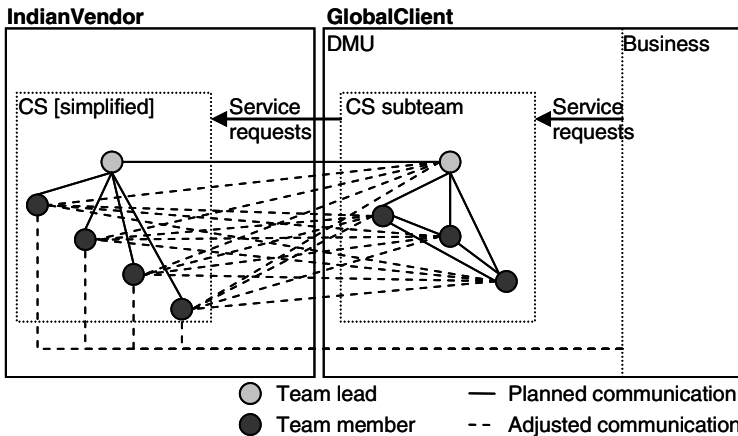


**Fig. 4.** Actual interaction structure in one CS subteam (illustrative)

### 4.3    Department Level: Integrating KAD and CS Teams

The differences between the KAD and CS teams regarding size and organizational structure are due to varying maturity of the processes and reorganization of the departments. GlobalClient's department head, who is responsible for both teams, explains how his own involvement differs between the two teams because of this:

*„[I participate in the CS team meetings more often] because in CS we haven't made as much progress regarding automation and streamlining as in KAD. KAD has reached a very high level, it runs like clockwork. CS on the other hand has some major difficulties. There is more work to be done to bring that area into the right 'format' to work smoothly by itself. There is still much potential for optimization. Therefore I like to participate in the calls, just to see what the problems are, where we are in the development, and to get some feedback." (Department head at GlobalClient)*

Given the different stages of maturity, GlobalClient also implemented client internal knowledge exchange measures between the different teams (KAD, CS) for sharing experiences.

*"Now we have started to get rid of some gaps we had between the internal teams, to say 'let's take a broader perspective and see what we can learn from KAD, from CS, or from [internal] teams A, B, and C.' [We discuss] all these things where you say: 'Hey, it makes sense to align this [across the internal teams].' [...] We even have KAD client team members participating in the CS weekly call. So it's getting better. In the beginning it was a silo mentality, but now it is quite good." (Department head at Global-Client)*

GlobalClient continues to further adjust the interaction structures between the different teams (such as KAD and CS) towards closer collaboration and more interaction between the actors at all levels.

## 5    Discussion of Results

Based on the results presented above, we now discuss the findings in the context of extant outsourcing research. The initially planned interaction structures between client and vendor teams in our case were adjusted through four mechanisms to improve efficiency and effectiveness of collaboration (as illustrated in Figure 5):

1. Direct interaction of vendor team members with the business improves the efficiency of the collaboration because it reduces communication effort.
2. Direct interaction between vendor and client team members improved the effectiveness of vendor services as vendor team members gain more knowledge of the business context and thus can fulfill more advanced tasks and get engaged in problem solving.
3. Joint team calls of vendor and client team members improved both efficiency of problem solving and effectiveness of knowledge exchange as they reduce time consuming one-to-one explanations.
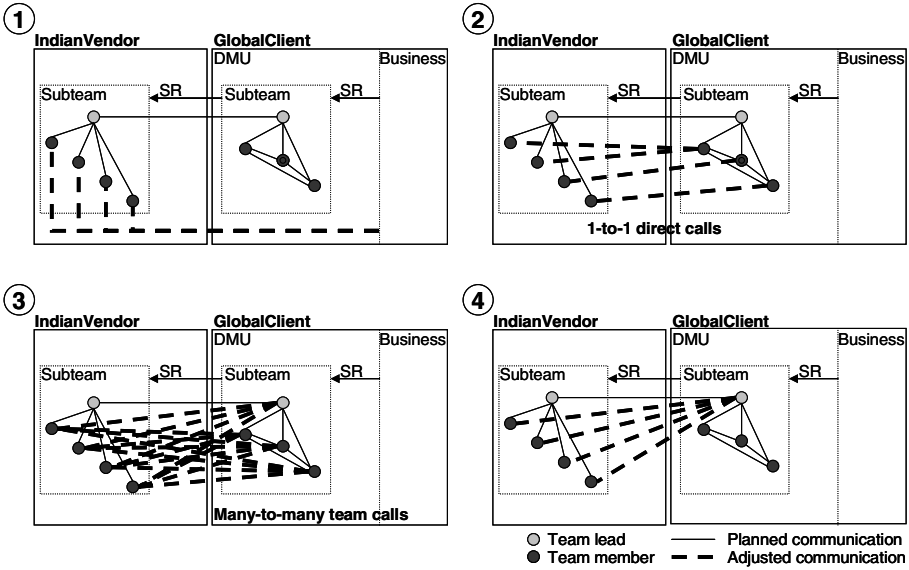
**Fig. 5.** Four mechanisms of adjustments in interaction structures

4. Direct interaction of client team leads with vendor team members allowed more efficient instructions, especially in the starting phase, and thus more effective vendor services.

In addition, the internal alignment between client teams was improved through team lead meetings, which also include discussions of interaction modes with the vendor.

Our results show that in both client teams interaction structures were adjusted in order to improve knowledge exchange between client and vendor. This is in line with previous studies in the software development domain, which elaborate on comparable mechanisms for knowledge exchange between client and vendor (e.g., [22, 23, 10]). These authors discuss measures for socialization such as client representation in vendor teams, rotation, or onsite/offshore visits – especially in the context of tacit knowledge which needs to be transferred between the vendor and client team members. Our case study extends this perspective into IT-based process outsourcing and shows that this principle appears here, as well. However, besides the positive effect on knowledge exchange, the adjustments to the interaction structures come with disadvantages as well. Our analysis shows that the vendor team members' direct interaction with the business affords a comprehensive training of new vendor team members. The coaching models cover part of this, but they are time consuming on client side. Another potential disadvantage was raised by Williams [10] who suggests that managers should monitor potentially inappropriate informal discussions in the offshore location, though he could not support his hypothesis that they have a negative effect on knowledge transfer. By contrast, informal discussions were not found to be negative in our case, but are rather seen as helpful to quickly find solutions. Williams [10] argues, that especially "localized" discussions in an offshore location could be an issue because of missing documentation and use of second-hand knowledge.

A possible explanation is the difference between IT-based process and software development outsourcing, as one could argue that software development outsourcing requires (generally) a deeper understanding of the business domain, with a thorough documentation of problem solving routines and where transfer of tacit knowledge is highly required for developers. Another possible explanation that this did not show up in our case is that the team is fully dispersed, thus, informal discussions take place across all locations and between client and vendor team members equally.

The dispersed and multi-cultural setup in this case might trigger the question, which impact cultural differences have on the collaboration. While this was not in focus of our case study, we could still see differing opinions on this between our interview partners. Some mentioned the "typical" differences between Indian and Western cultures (e.g., Indian team members being very accommodating and unlikely to say "no") and the multicultural atmosphere was described as challenging. However, the cultural gap was not seen as a major problem as it could be addressed by long-term experience in a multicultural setup, by standard processes and the intensified communication. This is in line with Jain et al. [9], who found that higher interaction served to build trust between client and vendor and thus addressed the cultural gap which might lead to vendors not talking openly. We can also see parallels to Dibbern et al. [24], who argue that a common knowledge space enables open communication between the groups, addressing the cultural distance.

Most of our interview partners, especially at the operational level, appreciated the adjusted, dense interaction structures. In contrast, the vendor department head would have preferred people to maintain the planned structures because from her perspective direct calls from the client team lead to the vendor team members disrupt their work and confuses them. Furthermore, the client management was not aware of the extent of open communication and does not expect the vendor to build additional interaction links but rather to simply deliver their service. Obviously, the management misconceives the interaction needs and actual structures at the operational level. Differing opinions on a dense vs. channeled interface setup also occur in previous research, focusing on project-based software development or engineering tasks outsourcing [25, 15, 5]. Leonardi and Bailey [5] and Levina and Vaast [15] find that vendors prefer high density while clients prefer a more channeled interaction setup. Our case shows that in the domain of IT-related process outsourcing dense interaction structures can well be in the interest of both client and vendor, even if the management might not perceive the advantages. The goal of dense interaction structures, however, is the same for all contexts: knowledge transfer from the client towards the vendor. Leonardi and Bailey [5] and Levina and Vaast [15] identify the two differing views of advantages of dense vs. channeled interaction structures on client and vendor side, i.e. the organizational boundary corresponds to the boundary between the perspectives. However, the boundary in our case runs orthogonally and differs between the different organizational levels: on the operational level both client and vendor team members prefer a dense communication setup, while the management level at least on vendor side sees more advantages in the channeled interaction. Our case shows advantages of high density especially in the phase of vendor learning. Due to ongoing development and changes in the processes, this phase lasts and the interaction structures stay dense. Generally, we would hypothesize that network density between the vendor and client service teams will decrease over time because the need for knowledge transfer towards the vendor decreases after the relationship has

been settled and routinized. However, our observation showed that the initially un-planned interaction between vendor and *business* is likely to persist, as it serves to clari-fy questions on individual SRs and thus improves service efficiency regardless of the phase of knowledge transfer.

In summary, the initially planned interaction model was channeled through certain interface actors, while the adjusted model has high network density. This model was preferred to ensure better understanding on the vendor side and thus to improve their services. The need for dedicated knowledge transfer measures was driven by global spread of client and vendor team members, vendor turnover and the need for business understanding on vendor side. Furthermore, the ongoing process transformation re-quired dynamic adjustments of interaction structures. Table 4 gives an overview of the results. Our case study revealed new insights into the individual level of interac-tions and relationships in offshore outsourcing arrangements. Our findings support the notion, that management measures which increase interaction between client and vendor team members improve knowledge exchange between the parties. We could also see that interaction structures between the individuals involved develop over time, adapting to new needs and circumstances of the outsourcing arrangement. This evolution of structures is likely to be found also in other outsourcing and offshoring situations, as the people acting on both sides shape the interactions and thus the client-vendor relationship. We can argue that relationship management needs to be flexible and must not treat initially planned and formalized structures as "carved in stone" but rather as an initial framework of collaboration. Over time, managers should be aware of changing needs and allow corresponding changes in the interactions structures. It is important to keep in mind that these changes might also require new skills or know-ledge from the team members, e.g. for direct interaction between vendor and business.

**Table 4.** Overview of results: how and why do real interaction structures differ from planned ones?

| How do interaction structures differ? | Why do they differ? | Case Context |
|---|---|---|
| Direct interaction of vendor team members with business side (in-itiated from vendor side) | More efficient handling of service requests, reduced communica-tion effort | Team members handle service requests from business and directly contact them for additional information (KAD and CS). |
| Direct interaction be-tween vendor and client team members | Need for knowledge transfer for more effec-tive vendor services | KAD: one-on-one mentoring approach CS: Open coaching sessions with several vendor team members |
| Joint team calls of vendor and client team members | More efficient problem solving and effective knowledge exchange between vendor and client team members | KAD: *all* client and vendor team members participate to share best practices and to get instructions from client team lead. CS: team members join by own choice in case of specific questions. |
| Direct interaction of client team leads with vendor team members | More efficient instruc-tion of vendor team members and thus more effective vendor ser-vices | KAD team lead directly instructed vendor team members in the starting phase. CS team lead is open for questions from vendor team members. |

# 6     Conclusion

This paper presented an exploratory case study of a global outsourcing relationship and the changes to initially planned interaction structures. The case shows that fitting interaction structures are an important prerequisite for knowledge exchange within and across organizations. Therefore client and vendor in outsourcing relationships should refrain from strictly adhering to planned interaction structures. Instead, they should dynamically adjust them to changing knowledge exchange requirements given the circumstances of the outsourcing relationship. Our case study revealed four mechanisms that changed the interaction structure between client and vendor: a coaching model, direct communication with the client's business, joint vendor and client team calls, and direct interaction of client team leads with vendor team members. The right interaction structures can thus contribute to the success of outsourcing arrangements. Especially in global setups they are important as knowledge sharing does not happen as naturally as in shared work spaces with face-to-face interaction.

Our work is based on one case study and thus has limited generalizability. However, in an explorative approach a larger number of cases is desirable but not necessary, as we aim at revealing new insights. We investigated two different teams,  covering both the vendor and client sides, which gave us rich insights through multiple views. We therefore believe that our research is highly relevant for practice and research and points to relevant areas for further research on the role of interaction structures in outsourcing relationships: Future research should broaden our findings by (1) extending the list of drivers behind changes in interaction structures, (2) understanding the context variables relevant for choosing the right interaction model, and (3) deriving more specific management recommendations on how to adjust interaction structures in outsourcing relationships.

As even the analysis of our rather manageable scenario shows, outsourcing relationships are complex social phenomena with rich and manifold aspects to be explored. It is up to future research to shed more light into the social networks and to increase our understanding about which structural patterns lead to superior outsourcing effectiveness.

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# Asset Transfer in IT Outsourcing: Divesting Commodities or Inviting Investment?

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**Abstract.** Information technology outsourcing is often accompanied by the risky practice of transferring clients' production assets to vendors. It is unclear why outsourcing similar services is, at times, accompanied by asset transfer while at other times is not. Theoretical explanations in the Resource Based View and Property Rights Theory have tended to separately focus on either the nature of the outsourced service or the ownership of the asset. I argue that independently they offer only partial explanation of the common phenomena and consequently propose an integrative framework. Based on two well documented case studies, I offer an illustration to the merits of the framework.

**Keywords:** Information Technology Outsourcing, Asset Ownership, Contracting.

## 1    Introduction

Information Technology (IT) outsourcing has moved from the realm of risky decisions taken by early adopters to being a routine decision that every CIOs takes. While the process and the industry appear to show degree of process maturity, one aspect of IT outsourcing remains rather understudied: which is the fate of internal assets once associated with the service has been just outsourced.

> *In a three year period in the late 90's, three airline companies entered into three separate multi-million dollar outsourcing arrangements with IBM. Cathay pacific brought in IBM to only "manage" their datacenters, Korean Airlines, went one step ahead and set up a venture where they jointly owned the datacenter with IBM and Air Canada, went all the way and transferred the ownership of their datacenter infrastructure to IBM.*

It is interesting that in these early examples similar companies outsourced similar functions to similar vendors adopting very different strategies regarding the assets that are associated with their outsourced services. When Cathay Pacific handed over their network systems to SITA [1] in addition to a thousand employees, various physical assets associated with the network services became instantly redundant.

The decision on where these redundant assets ought to be located post-outsourcing is central to assessing the riskiness of outsourcing. The assets may not have any market value considering that these assets become rapidly obsolete. However, they often have tremendous firm specific and task specific value due to their being customized for a particular firm's operations. Therefore owning the IT assets offers a safeguard to both clients and vendors alike. From the general purpose desktop computers to highly customized mainframes, IT asset ownership introduces a degree of control over the underlying process. For vendors delivering a service to the clients, owning the assets offers an incentive to invest in the assets and an implicit assurance that the clients will continue to honor the contract. While client firms may want to rid themselves of the hassle of managing their assets, owning them safeguards against being held up by opportunistic vendors. This two-sided riskiness is one of the leading causes of pre-term contract renegotiations. In the 300 billion dollar IT outsourcing industry [2] plagued by a success rate of merely 50%, reducing the likelihood of pre-term renegotiation is a million dollar question, to be precise a150 billion dollars question.

Capital assets on a sell-and-lease-back arrangement are a source of timely cash-infusion. Therefore, often the justification for this asset transfer decision lies in financial engineering. The extra cash and the possibility of ridding itself of non-core assets would suggest an obvious decision to transfer assets out to the vendors that now manage the service. However the three airline examples seem to suggest that there is no single obvious approach to this choice.

The variety in the asset-transfer strategy raises a series of questions: Does the quick and easy one-time cash infusion outweigh the long-term risk of losing control over the assets? How does a firm identify assets suitable for transfer? And how can governance effort be suitable allocated to minimize the associated risks?

The key to formulating a strategy lies in identifying that the decision on asset transfer is not subsumed in the decision to outsource a service. What to outsource and what to do with the now redundant assets are joint decision with different drivers. It is relatively straightforward to identify whether a particular service is suitable for outsourcing or not based on whether they are sources of sustained competitive advantage. This viewpoint has been proposed since the early nineties in the widely accepted theoretical perspective called Resource Based View. The new insight lies in understanding that the decision to outsource a service does not automatically predict the ideal location of the underlying assets. Therefore for a complete prediction, on must identify a reason for outsourcing and then make the simultaneous decision of whether the assets that power the outsourced services make ideal candidates for transfer or not.

When Air Canada brought in IBM to manage their data center it did not automatically trigger the decision to transfer all the IT assets to IBM. There was a conscious decision by Air Canada to hand over the residual rights to IBM to offer sufficient incentive to them to keep on investing into the IT assets.

## 2    Hold Up: The Essential Risk in Outsourcing

Outsourcing attracts  a wide set of risks ranging from the clients' fear of losing the ability to develop valuable competencies [3, 4] to vendors suffering a "winners curse" for having bid too aggressively [5]. The challenges associated with outsourcing have led some scholars to consider "insourcing" as an option [3, 6]. The risks of opportunism associated with outsourcing, otherwise known as the risk of 'hold-up" is further elevated in the presence of asset transfer [7].

With the transfer of assets, clients become dependent on the vendor to maintain the level of service. The vendors, on their part, having made complementary relationship specific investments become dependent on the client to maintain demand for services. Further, clients are subject to the risk that the vendor, being aware of the clients' dependence on them, may be less responsive to their needs of higher volume or quality of service or wish to renegotiate prices on their terms. The vendors are simultaneously at risk that having made the substantial investments they may be forced to concede to harsher terms if the client choses to renegotiate consumption terms which in turn can affect their plan to recoup the investments.

Literature based primarily on Transaction Cost Economics (TCE) has addressed the nature, and to some extent, mitigation of this bilateral risk through the *structure* of the outsourcing relationship. TCE, developed largely by Williamson [8, 9], suggests that the tradeoff between production cost advantages and the transaction costs of governing a market relationship influence the choice of whether the firm locates the production within the firm or outside it. The presence of relationship specific assets increases the transaction costs of market based governance, and therefore sets a higher threshold for the production cost advantages offered by the vendor [9]. Given that both vendors and clients assume higher risk when assets are transferred during outsourcing, vendors are challenged to offer greater production cost advantages: It is therefore intriguing that vendors and clients would deliberately place themselves in the seemingly risky situation when the apparent marginal benefit is limited to the client's ability to liquidate their fixed assets. Further, given that IT assets are often considered general-purpose technology with a rapid rate of depreciation, it is additionally interesting to examine why vendors would consider purchasing such assets and often at book value which can be much higher than market value [Page 42, 10].

The threat of opportunism in outsourcing is non-trivial. Examples of large outsourcing deals having unraveled over allegations of opportunism are not uncommon[1]. Neither strict formal contracts with stringent conditions, nor strategic partnerships with shared objectives have been able to eliminate the risks associated with asset transfer.

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[1] Two high profile, multi-billion dollar outsourcing arrangements that unraveled over allegations of opportunistic behavior are "Cable & Wireless Plc v IBM United Kingdom Limited."(2002)EWHC 2059 (Comm) `http://www.bailii.org/ew/cases/EWHC/Comm/2002/2059.html` and "Sears, CSC fighting over IT contract termination fees" `http://www.computerworld.com/s/article/101910/Sears_CSC_fighting_over_IT_contract_termination_fees`

## 3    Related Literature

Two rich theoretical traditions offer independent perspectives on addressing the two separate parts of this problem: the Resource Based View (RBV) helps identify whether particular resources are sources of sustained competitive advantage or not and Property Rights Theory (PRT) helps to understand the optimal ownership structure of assets that incentivize investments.

Adaptation of RBV to IT Outsourcing has simultaneously suggested two divergent motivations for outsourcing. First, it has been suggested that firms may choose to acquire a resource from a third party in order to fill the gaps in a firm's portfolio of strategic resources [11]. Second, firms may choose to outsource in order to get rid of commodity  resources to concentrate on a set of "core competencies"  [12]. Regardless of whether outsourcing is seen as acquiring a resource or divesting a commodity, both viewpoints focus on identifying the services suitable for outsourcing without aiding the decision on the *location of the asset* involved in the service delivery.

PRT, on the other hand, is less concerned with the specific service that the vendor provides in a bilateral trade but with the ownership of the asset that is complementary to the service provision. PRT, in its basic form, states that owning the residual rights of an asset provides an incentive to invest in the assets. Thus the provider of the non-contractible complementary asset (here IS management skills) can be incentivized to make relationship-specific investments by being given the residual control rights to the contractible assets (physical IT assets). Therefore, PRT offers some support in order to understand the motivation for asset transfer in outsourcing. However, while the focus of PRT is on identifying the optimal asset ownership, the theory is silent on the choice of the service suitable for outsourcing.

The arguments above indicate that for the decision of what to outsource and how, both theories only offer partial explanations. It still remains an open question of why in certain cases services are likely to be outsourced with assets while in certain cases they are outsourced without any transfer of assets.

The objective of this paper is two-fold. First, I present the application of the two theoretical bases to outsourcing. I then develop a conceptual framework that builds on the prediction of each theory to provide an integrated approach to predicting the suitability of assets for transfer. I then use two examples of firms that have outsourced their assets to illustrate the application of the framework.

## 4    A Brief Introduction to RBV

RBV is a well-regarded perspective to evaluate a firm's ability to attain and sustain competitive advantage [13-15]. As a result, RBV has often been applied in the context of a firm's decision to centralize or decentralize. Various studies have used RBV to inform us about Information Systems capabilities, strategies and outcomes [11, 16-19]. Given the central premise of RBV as a way to assess the value of a resource, it offers an excellent lens to identify business functions that are likely candidates for

outsourcing. Based on the theoretical arguments that support outsourcing some services over others, I identify the traits of services that are better suited for transferring to the vendor.

Early literature on RBV suggested that firms might want to extend their boundaries in order to access external tangible or intangible resources that could strengthen the firm [15]. Wernerfelt suggested that firms would likely want to own attractive resources like capacity, technical leadership, or product experience in order to supplement existing strengths or complement them through a vertically integrated firm structure. As an alternative to owning the resource, it was suggested that firms may choose to procure certain resources from the market in order to fill strategic gaps in the firm's set of resources [20]. While ownership and sourcing suggested acquiring the resource, RBV has also been applied to justify divesting non-core resources in order to focus on strategic resources [12]. Regardless of whether the firm divests commodity resources or attracts strategic resources, this broad stream of literature suggests that firms' strategic options are significantly dependent on acquiring resources (either within the firm or through a market structure).

Literature on RBV has also presented various interpretations of what constitutes a 'resource'. Barney [13] defines them as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc." Classifying these resources as physical, capital, or organizational capital, he also suggests that not all resources are sources of competitive advantage; only those that exhibit properties of value, rarity, imperfect limitability and a lack of strategic substitutes can provide competitive advantage. Valuable resources are those that allow a firm to exploit the market opportunities. Rare resources are defined as those that are heterogeneously distributed among competing firms. Resources that are jointly valuable and rare allow firms to *attain* competitive advantage. However, their relative immobility prevents competition from usurping these resources and a non-substitutability prevents competition from attaining the same strategic benefits. Therefore, the possession of immobile and inimitable resources allows a firm to sustain the competitive advantage it has achieved.

## 4.1    RBV and Information Technology

The potential for Information Technology investments to add economic value in a firm has been quite conclusively demonstrated in the literature commonly known as the IT Productivity literature.[2] However, from an RBV perspective, sustainable competitive advantage (SCA) requires more than just the ability to generate value by lowering cost or increasing revenue [22]. Mata et al. review the RBV literature and identify five commonly cited attributes of IT that are likely to provide the firm with a SCA. These are *switching costs, access to capital, proprietary technology, technical*

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[2] See 21. Dedrick, J., V. Gurbaxani, and K. Kraemer, *Information technology and economic performance: A critical review of the empirical evidence.* ACM Computing Surveys (CSUR), 2003. **35**(1): p. 1-28. for a review of the productivity literatur.

*IT skills, and managerial skills*. However, of the five, they eliminate all but managerial skills, specifically "managing IT within the firm," from the set of IT attributes that are likely to sustain a firm's competitive advantage. They eliminate switching costs arguing that customers can easily anticipate the likelihood of future lock-in; vendors who do create switching costs can develop a bad reputation, and competition will likely find solutions to technological lock-ins. They further argue that access to capital, proprietary technology, and technical IT skills do not meet the requirements of rarity, inimitability, and non-substitutability, which leaves only *managerial IT skills* as an IT resource that can possibly lead to SCA. By 'managerial IT skills' they broadly imply the ability to appreciate the current and future business needs and the ability to develop IT applications to meet the business needs.

While Mata et al. focus on the application of IT resources to deliver SCA, Wade and Hulland [19] suggests a typology of the IT resources itself. They classify resources as one of three kinds, namely inside-out, spanning and outside-in. Inside-out resources are internally focused and are deployed in response to the market (for e.g. assets used to reduce costs). Outside-in resources are those that anticipate the market (for e.g. resources to reduce response time). Spanning resources are those that those that take advantage of both kinds of resources (for e.g. management skills). Mapping this framework onto IT resources, Wade and Hulland suggest that inside-out IT resources include IT infrastructure, software development skills, technical skills that combine knowledge assets, hardware and software, and finally cost effective IT operations. Outside-in resources are external relationship management and responsiveness to the market changes. Spanning resources include IS related business partnerships and IS planning and change management. Comparing the properties of Value, Rarity, Inimitability, and Non-substitutability among these three categories the authors predict that outside-in resources and spanning resources are the ones that are likely to create initial and sustainable competitive advantage.

Amit and Schoemaker (1993) suggested that the combination of (tangible) resources and (intangible) capabilities that delivers SCA is a 'Strategic Asset'. This construct maps closely to the notion of SCA arising from deploying intangible managerial assets that are boundary spanning and external focused.

From the arguments so far, we infer that outsourcing to attain strategic benefits can imply retaining such SCA-generating resources in-house and ridding the firms of non-strategic assets. Applying these criteria to the attributes of IT, a firm is likely to retain control of its 'managerial IT skills' which is the IT resources that generates SCA, while letting go of assets whose contribution is limited to technical skills or merely generating switching costs. Thus, 'inside-out' assets such as IT infrastructure, software development skills, hardware are likely to be ideal candidates for locating outside the firm. Combining the two viewpoints, one may characterize the traits of transferable IT assets as a combination of generic technical skills, and related infrastructure assets that are used in order to respond to the market rather than predicting it; such resources are not likely to be considered strategic resources. For conciseness, I refer to this attribute of resources as *commodity assets*.
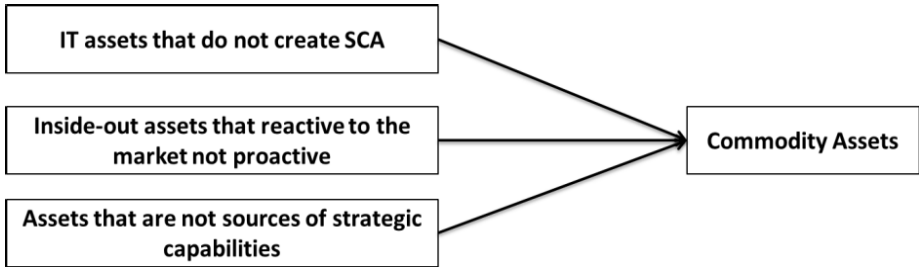
**Fig. 1.** Transferable assets as per RBV

## 4.2 Property Rights Theory and Its Application to ITO

The essential argument in PRT dating back to Coase [23] is that given the transaction costs of contracting, joint ownership can be socially optimal. Recent interest in PRT to analyze firm boundaries and asset ownership can be attributed to the mathematical formulation by Grossman, Hart, and Moore [24-26]. The refinement suggested in these papers is that joint ownership by the party that owns the non-transferrable asset reduces the risk of under-investment. The following examples elaborate this further.

Earlier theories to explain integration focused on the rent-seeking ability of the trading party that owned the relationship specific asset. For instance, General Motors purchased their upstream supplier Fisher-Body to avoid being held-up by them [7]. However, such a viewpoint favored larger firms over smaller firms and as a result offered little explanation for the limits of integration. In contrast, PRT offered a theory of the firm that offered to pin point the boundary of the firm. Grossman, Hart, and Moore (GHM) showed that when the assets owned by the client and the vendor are independent, then non-integration can be more optimal than integration. As a result they suggested that a firm's boundary would extend *until* where the firm's downstream (or upstream) asset was 'independent' of the firm's own assets [26: 45].[3] The definition of independent and complementary assets and the intuition for this result is presented in the next section.

GHM's theoretical model maps closely with the actual process of outsourcing. IT Outsourcing can be characterized as trade between two firms, each of which possesses complementary assets required for service delivery. Typically, the IT vendor contributes the human assets while the client owns the physical asset.[4]

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[3] Another fine distinction that makes property rights theory more applicable to our context than the rent seeking theory suggested by Klein et al. is that integration allowed for removing the haggling costs associated only with the physical (alienable) assets. If the source of inefficient haggling was the human asset (or any other inalienable asset) then integration alone offered no advantage 27. Gibbons, R., *Four formal(izable) theories of the firm?* Journal of Economic Behavior & Organization, 2005. **58**(2): p. 200-245.

[4] The vendor may also possess related physical assets like the offshore delivery center. However, such assets are usually general purpose and can be repurposed for another client with little cost, and as such do not affect the analysis significantly.

Two critical assumptions of this theory make it especially applicable for ITO. PRT departs from the earlier theoretical stance of agency theory where contracts can be complete and efficient contract design alone can ensure investment by the agent. In a more realistic context, PRT accepts that contracts are incomplete and that contracting parties have limited means to ensure optimal investments by the service provider.

The second critical assumption is that the efforts invested in the relationship specific assets are seldom verifiable (even if observable) by a third party. Given these two pertinent conditions, PRT offers an excellent lens to examine the ITO context where contracts are incomplete and vendors possess assets that are complementary to the services required by the client.

In general, the theory predicts that incentives to make client specific investments are greater for the vendor when it jointly owns the physical asset and non-contractible knowledge assets. The predictions of this theory, in a more common setting, can be seen in the incentives of a driver to drive more cautiously when driving an own car compared to a rental car. Since the residual rights of the car belong to the owner, he is incentivized to invest in the car. However such incentives do not come into play when the residual rights of the car belong to a rental company. The next section applies the theory, it assumptions, conditions and predictions in the context of IT Outsourcing.

## 4.3    Application of the Model to ITO

Two extensions to property rights theory have direct relevance to the structure of an outsourcing arrangement. Hart and Moore ('90) prove that if an agent is indispensable or idiosyncratic to a physical asset then transferring ownership of the physical asset to the agent minimizes under-investment. Further, they show that complementary assets are best jointly owned. Applying this to IT, it has been shown that informational assets that are complementary with the physical assets should be owned together In other words, the owner of the informational asset, namely the service provider, is better off owning the physical asset.

The general results of the model become clearer with a specific example of IT outsourcing. Consider a typical annuity based outsourcing arrangement for management of mainframe systems.[5] The client seeks proposals from vendors to deliver IT services that include:

- Ongoing management of hardware, applications, services hosted on the mainframe
- Periodic services, upgrades, new technology and change management
- Support services of Facilities management, capacity and performance management, backup and disaster recovery services.

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[5] RFP by the City of Chicago for mainframe outsourcing, managed hosting and enterprise computer print service is an example where these requirements have been stated 28. City of Chicago, *REQUEST FOR PROPOSAL ("RFP") for MAINFRAME OUTSOURCING, MANAGED HOSTING AND ENTERPRISE COMPUTER PRINT SERVICES*, D.o.I.a.T.c.o.V.C. Departments, Editor 2010, Department of Procurement Services: Chicago.

The vendor then responds to the RFP with a price and commitment to deliver as per the expected service levels. The price is typically a function of the upfront investments, cost of service delivery, and a mark-up.

The cost structure of a typical mainframe outsourcing arrangement can be categorized into upfront costs of Hardware and Software and ongoing costs of Staffing, Facilities, and Support [29]. Software expenses refer to the software involved in managing the hardware and not the cost of business applications. Staffing refers to the cost of the technology related staff responsible for managing the hardware and software resident on the mainframe. This staff is different from the business user who might use the applications and data in the mainframe in their business decision making. The cost of facilities includes power, cooling, building maintenance systems etc. Support and maintenance refers to the costs of maintenance of the physical devices, installing upgrades and patches, etc.

Depending on the structure of the outsourcing arrangement, the share of costs borne by the vendor can vary. Three modes of accessing mainframe capacity are common: the mainframe may be owned by the client, or leased by the client from a third party, or the mainframe may belong to the outsourcing vendor.

To apply the elements of the model in PRT to this example, let us consider the investments and assets involved.[6] Initially, the client owns the mainframe and the related personnel. The successful vendor possesses human assets and the physical facilities to house them. Until they trade, no relationship specific ex-ante investments have been made. However, both client and vendor have made investments in the past in their respective assets in order for them to be more valuable. Various configurations of asset ownership in the outsourcing arrangement are possible. Let us consider the case where the client has agreed to contract with the vendor and the vendor has the option of acquiring the client's assets or delivering the service using the client's assets[7].

Examples of ex-ante investments from the client's side are software programmers' costs in the clients IT department, investments into ensuring continuity of operations of the mainframe etc. (Such ex-ante investments were made for the client to continue to earn revenue from the asset). A typical vendor makes ex-ante investments in human resources that contribute to being better skilled at managing the mainframe system.

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[6] A point of distinction between a typical outsourcing arrangement and the assumptions of the PRT is the treatment of the conditions that constitute 'integration'. While the model loosely refers to integration as one firm owning the other firm, large outsourcing relationships do not generally result in a client owning the vendor firm in a model of (vertical) integration. However, annuity based outsourcing arrangements are often governed by a legally binding document called the Master Services Agreement that specifies the general rights and responsibilities of each party. The MSA is separate from the Statement of Work (SOW) that deals with the specifics of the service to be delivered. It is the SOW that deals with the lack of observability and verifiability of the assets and the related efforts. Therefore I assume that the control rights assigned by the MSA is akin to the requirement of integration in the model in Hart 1995.

[7] This is comparable to type 2 integration or non-integration, respectively, in the Hart 1995 model.

Based purely on the prediction of PRT, the mainframe (corresponding to asset 1; the variables in the parentheses in this and the next paragraph refer to the model in the appendix) is better owned by the vendor (Manager 2) if the mainframe requires the use of vendor's relationship specific investments ($e$) which are essential to the functioning of the clients assets or when the vendor's physical assets (asset 2) are 'strictly complementary'. For a mainframe outsourcing service delivery it is likely that vendors possess proprietary complementary physical assets such as site licenses, bug tracking software, physical infrastructure etc. in addition to essential relationship specific investments in human capital such as COBOL programmers. While such essential and complementary resources are likely to have existed within the client firm, given that outsourcing has taken place, it is likely that vendors' investments are more essential and complementary.

Additionally, it is better to transfer the assets to the vendor, when the client's investments ($i$) are relatively unproductive. In the case of the RFP issued by the City of Chicago  [28], they state that the move towards outsourcing is driven by their objective *to limit* their ongoing investments into upgrading and managing their mainframe. It is conceivable that given their need to invite enhancement from outside vendors, their internal investments were relatively unproductive.

When the vendor is expected to continue to make investments into complementary physical assets and essential relationship specific assets, then the incentives are higher when both the client's and the vendor's assets are jointly owned by the vendor. For conciseness, I refer to the assets that possess the attributes of seeking investments into complementary human assets as **Needy Assets** as in the figure below.
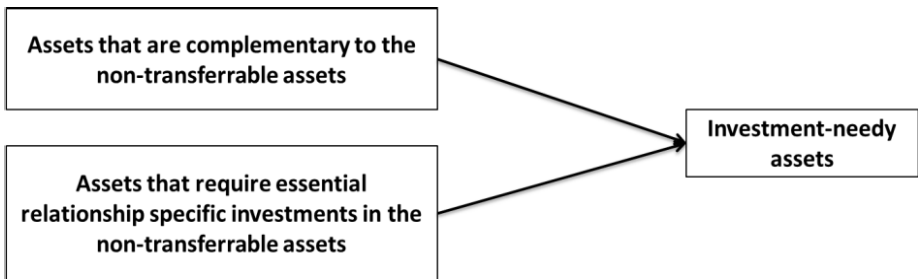


**Fig. 2.** Transferable assets as per PRT

## 5      Asset Transfer Driver Framework

The above discussion presents two dimensions along which IT assets can be classified. RBV suggests transferring internally focused commodity assets, while according to PRT assets that seek investments are best suited for transfer to vendors. Integrating the two dimensions, assets can be classified into four categories: assets that are high or low in each of the two dimensions as in the table below. Of the four possible combinations of IT asset attributes, in the first two cases discussed below both the theories tend to unanimously support or reject the notion of transferring

assets to the vendors, respectively. However, in the last two cases, the prediction is not as direct. The four cases have been represented in the matrix below.

**Table 1.** Asset transfer driver framework

| | | From PRT: Assets that seek investments are ideal candidates for transfer to vendors | |
|---|---|---|---|
| | | Investment seeking assets | Non-investment seeking assets |
| From RBV: commodity assets are better suited to transfer | Commodity assets | E.g., IT infrastructure that requires scarce and constant investments in complementary IS skills. | E.g., IT assets with large capital expenses but having limited customization and needing little maintenance investments over time. |
| | Strategic Assets | E.g., ERP applications are likely to be strategic assets yet require complementary investments in human resources. | E.g., shrink wrapped applications that help decision support. |

## 5.1    Non-strategic, Investment Seeking Assets

IT assets that are not considered strategic, (i.e. inward focused) yet simultaneously require significant complementary investments appear to be ideally suited for transfer to a vendor. Such assets are less likely to be associated with valuable, rare, immobile, and inimitable managerial skills. IT infrastructure such as mainframe assets need constant maintenance, patches, and upgrades which are not necessarily geared at making the clients products or services more marketable. The programming skills involved in maintenance of legacy systems is generally scarce. However, for the vendor investing in these IS skills associated with managing mainframe systems is the ex-ante relationship specific investment that gives it a higher surplus from trade. As a result, in a scenario where the infrastructure related service is outsourced, both theories predict a benefit from transferring such assets to the vendor.

**Proposition 1:** Commodity, investment-seeking assets are likely to be transferred to the service provider as part of the outsourcing arrangement.

## 5.2    Strategic Assets not Needy for Investments

Strategic assets as described earlier are externally focused resources and capabilities. Predictions from RBV argue towards locating such resources within the firm. Strategic assets need not always require large or continuous investments in complementary assets.

Examples of such assets can include the communication network put in place along the supply chain. Both theoretical standpoints suggest locating such assets within the firm.

**Proposition 2:** Strategic assets that require minimal investments are likely to be retained in-house.

### 5.3    Commodity Assets Not Needy for Investments

From the RBV perspectives, internally focused assets are not likely to be heterogeneously distributed that it becomes a source of SCA. Thus, RBV would permit the transfer of such assets along with the outsourced service. However, in the event that such assets require limited complementary investment from vendors, PRT predicts that non-integration offers a socially optimal outcome (even if it suppresses the total incentives to invest). Taking both arguments together, RBV suggests transfer while  PRT suggests that transfer can do no worse than non-transfer implying that asset transfer can be a (weakly) dominant strategy. Further, clients often chose to outsource in order to limit their investments in the assets. Therefore, clients who have outsourced with the intention of focusing on their retained strategic assets are likely to transfer the non-strategic assets in order to reduce their investments.

**Proposition 3:** Commodity assets are likely to be transferred to the vendor along with the outsourced service, even when external investments are not essential or complementary.

### 5.4    Strategic Assets Needy of Investments

This set of assets pose the most interesting challenge. RBV suggests that resources that can help predict external environments and exploit the internal resources to meet these demands are sources of SCA. Transferring such resources and capabilities to a vendor may lead to the eventual loss of the firms' source of SCA. Fear of losing such skills has led to studies that question the benefit of outsourcing, suggesting instead that firms retain such services in-house. However, it is likely that even in the case of deploying such strategic assets, the firm can benefit from the complementary investments of an outsourcing provider. The firm is then faced with the interesting choice of whether to outsource the strategic asset or not.

Given the strategic nature of the assets, the client may choose to retain control over the strategic assets and contract merely for the vendor's knowledge services without asset transfer. While this option fits the prediction of RBV, from the PRT perspective it offers suboptimal investment incentives for the vendor and a reduced marginal return for the client. PRT predicts that when vendors provide complementary and essential assets, marginal returns from integration (combined ownership of the assets) can be greater than marginal returns from non-integration (each firm owning their own assets). Thus, the decision to transfer assets or not comes down to the firms priority between divesting commodity assets or attracting investments. Thus it is not directly obvious what the asset transfer decision ought to be. It is likely that firms faced with such a dilemma would then find ways to address the risk of countering the

theoretical predictions using sophisticated governance mechanisms. For instance, if the asset is transferred against the prediction of RBV, governance mechanisms to reduce the loss of strategic control over the assets are likely. If the assets are retained in house against the predictions of PRT, it is likely that the governance mechanism included additional measures to induce investments. Therefore while the decision to transfer assets or not is an empirical question, we can hypothesize that attention to details of governance will focus on the transfer of strategic assets if it takes place.

**Proposition 4:** Transfer of strategic assets that are needy of essential or complementary investments will attract sophisticated governance mechanisms.

# 6    Validation of the Framework

Published case studies offer an in-depth report on the drivers and details of decisions within organizations. While they are no substitute for primary data collected via interviews and surveys in terms of addressing precisely the needs of the study, they provide a quick and inexpensive access to historic events in the firm. Further, firms tend to be reticent in sharing the details of strategic outsourcing deals. As a result, the data limitation poses a serious challenge to collecting data for rigorous statistical analyses. This paper therefore relies on two published case studies to offer a preliminary validation of the proposed framework. Rigorous hypothesis testing would require additional data collection.

The first case presented here is a recent outsourcing arrangement undertaken by Bharti Airtel [30, 31] and the second is landmark deal signed in 1991 between General Dynamics and Computer Sciences Corporation [32].

## 6.1    Illustration 1: Strategic Outsourcing at Bharti Airtel

Bharti Airtel, a large Indian telecom company, needed to expand their IT capabilities to meet the increasing number of customers. Telecom infrastructure was clearly a strategic necessity to growth. For them acquiring Telecom infrastructure and managing their systems was clearly a strategic necessity to growth [20]. Bharti felt that the, "budgeting for capital expenditure was a nightmare." Their technology capacity requirement outran the rate at which they were able to procure it.

In this context, they decided to procure infrastructure, support applications, customer management information systems. The drivers for their outsourcing model were threefold. Bharti wanted a scalable IT infrastructure that could keep up with their business growth and yet offer a lean and predictable cost structure without large periodic capital expenses. In addition to the hardware requirement, they needed skilled technical personnel. However, they found it challenging to attract large numbers of skilled resources being a small upcoming telecom operator that was competing for this labor pool with large multinational technology companies. The third driver came from its competitive position among other more established telecom providers in the market.

Their outsourcing solution involved two contracts, one with telecom providers, Nokia, Ericsson, and Siemens for network capacity and the other with IBM for all other hardware and software requirements. For a telecom company, outsourcing its entire telecom network and operation was unprecedented and met with reservation from experienced board members.

The vendors were to be compensated on a revenue sharing model and hence were concerned that their investment recovery depended on Bharti's commitment to growth. Further, they were concerned about inheriting Bharti's employees that may not have integrated with their culture. In fact, the case states that IBM felt like they were, "betting on a horse in a horse race." However a year later, the skepticism was replaced with satisfaction of both Bharti and its vendors.

To illustrate the outsourcing arrangement in the context of my framework, I list the three broad services that were outsourced, and how they map to the theoretical predictions presented in the previous section.

**Telecom Network Systems and Software:** Those specifically related to the basic function of the telecom connection and switching system.

The case states that, "Bharti was very comfortable working with several suppliers" since, "everything is plug-and-play." Prior to the strategic outsourcing arrangement, that Bharti undertook they would release a tender every six months to purchase from these vendors. The tender evaluations would be a, "parade with one vendor playing against another." The constant repeated purchase from the open market suggests that there was limited physical asset specificity to the operations of Bharti.

These assets seemed to exhibit limited switching costs, were generic and commonly available. It is unlikely the telecom infrastructure management offered any intangible skills that could have led to sustainable competitive advantage. Thus, such network infrastructure appears to be 'non-strategic' from an RBV perspective. However, unlike the general purpose network infrastructure, *network capacity* that is used to support their customers is a strategic asset for addressing the needs of a growing market. Further, reliable uptime is critical in a low margin competitive market. Therefore RBV would recommend keeping network capacity in-house.

Maintaining Telecom network systems require essential human resource investments. However, the availability of such resources is not likely to be restricted to the vendor firm. Therefore while continuous investments are needed, it is unlikely that the investments made by the *vendor are client specific*. Therefore from the PRT perspective, owning such assets does not offer additional incentives to the vendor.

Prediction: applying propositions 2 and 3, network capacity is predicted to be kept in while network infrastructure will be transferred out.

**Customer MIS**
This system comprised of elements that captured customer usage and offered value added services such as ring tones and games. This service was to be provided by IBM as per their outsourcing arrangement. Value added services were offered by all telecom providers, and as such offered little strategic advantage. Managing customer usage data can likely be a resource that can help them compete with established competitors. The description of the system matches the classification of outside-in or

external facing systems as per Wade and Hulland (2004). Thus, the RBV perspective would likely predict that customer management is a source of SCA while the provision of games and ring-tones, although value generating, is not a source of SCA.

In terms of complementary investments, it is likely that the growing operation would require constant improvements in the databases that store customer information. Thus, customer database management is likely to seek complementary investments from the vendor. While RBV is likely to suggest retaining the associated assets in-house, PRT would suggest that the associated databases be owned and managed by IBM in order to incentivize them to make continuous investments in scalability and reliability.

Prediction: from proposition 4, customer MIS would be outsourced with assets and emphasis on governance would be high.

## Business Support Software, Internal Programs, Internet Access, HR, and Financial Databases

This set of applications was described as "fragmented bubbles of outsourcing" needing huge capital expenditure to offer an integrated system capable of meeting their growing business. The description provided seems to suggest that outsourcing this service would benefit from transferring associated assets to incentivize vendor investments. Thus, predictions from PRT are likely to be in favor of transfer.

These disparate systems represent the IT systems inherited from other telecom partners. They were often incompatible and missed many functions such as fraud management that needed to be provided by third party service providers. Given the nature of these systems, it is unlikely that this set of discrete systems offers a combination of rare, valuable, inimitable, and non-substitutable assets. Thus, RBV is also likely to suggest transferring such non-strategic assets outside the firm.

Prediction: These functions would be most readily outsourced with asset transfer as part of the arrangement.

The tables below, lists our prediction and the actual outcomes of how the assets were or were not transferred.

**Table 2.** Asset transfer drivers for Bharti Airtel

| | | From PRT: Assets that seek investments are ideal candidates for transfer to vendors | |
|---|---|---|---|
| From RBV: internal focused generic resources are better suited to transfer | Commodity assets | Investment seeking assets | Non-investment seeking assets |
| | | Business support functions | Network infrastructure assets |
| | Strategic Assets | Customer MIS | Network Capacity |

Customer management solutions being strategic, Bharti might have chosen to retain the assets in order to not lose their competence in customer management. However, given their need for significant investments in making the system scalable

they chose to outsource this service and the related assets. I argue earlier that in such a situation it is likely that governance is of even greater importance considering that vendors' control on the strategic assets can induce a hold-up. Consistent with this thinking, the contract with IBM was novel in its revenue sharing design, imposed elaborate SLAs, and had an elaborate governance model that included a governance team at every level of the organization consisting of executives from both companies. The success of their outsourcing relationship with IBM, prompted the managing director to state, "Not only did we sign a terrific set of deals…we have redefined the complex vendor-operator relationship in this industry!" [31]

## 6.2    Illustration 2: Outsourcing the IS function at General Dynamics

In 1991, General Dynamics (GD), the second-largest defense company in the US, decided to outsource their entire IS function to Computer Sciences Corporation (CSC) in the largest ITO deal as of then [32]. The company comprised of four 'core' defense groups and three non-defense groups in addition to the IS department. Despite the IS department being highly successful, it was identified as a cost center and GD felt an urgent need to cut costs in order to stay competitive. The chairman's address in 1991 spelled out their strategy that for businesses within the conglomerate that were not within GD's "core defense competency" the policy would be "Buy, Sell or Merge." GD was clear that outsourcing was the way the opportunity to move fixed overheads into variable costs and "free themselves of capital expenditure on information systems in an environment of rapidly changing technology."

GD was simultaneously very aware that IT was 'critically important" and the "lifeblood" of their operations. Its IT department was responsible for the formulation of policies, and standards and for providing the full range of IT services to manufacturing and the support functions like accounting, payroll, and inventory management. IT support to manufacturing also covered support for engineering and simulation. Their products often included proprietary embedded chips, which offered a strategic advantage over their competition. Support for this set of services reflects a strategic focus while IT services for support functions like accounting and payroll appear to be not a source of strategic advantage. Therefore, it is likely that RBV would classify the IT service delivery to the support functions as non-strategic unlike the IT delivery to manufacturing, engineering, and simulation.

Clearly, the scale of operations (about 20 mainframe computers, almost 20,000 desktops, and hardware assets of about $140million in book value) implied huge complementary investments in support and maintenance personnel. Thus, it is likely that GD could benefit from complementary investments by the vendor. Further, for CSC the assets from GD's assets were complementary to their own assets as it offered the opportunity to enhance its capacity to attract new customers. Therefore from the predictions of PRT GD's assets appear to fall into the category that seeks complementary vendor investments.

The table above places the two functions of engineering and support functions in the quadrants that match investment seeking strategic assets and investment seeking non-strategic assets, respectively. Consistent with proposition 1 of the framework, we see that support functions of accounting, payroll, and inventory management are

**Table 3.** Asset transfer drivers for General Dynamics

|  |  | From PRT: Assets that seek investments are ideal candidates for transfer to vendors | |
| --- | --- | --- | --- |
|  |  | Needy Assets | Non-needy Assets |
| From RBV: internal focused generic resources are better suited to transfer | Commodity assets | Support for accounting, payroll and inventory management |  |
|  | Strategic Assets | Support for product engineering, manufacturing and simulation |  |

outsourced along with the assets. Engineering and manufacturing support, likely being strategic could have been retained in-house or transferred out depending on the trade-off between need for investments and the ability to manage the risks of outsourcing. That they chose to transfer these strategic services without transferring the underlying assets seems to support the predictions of the framerwork. Finally we do see that the repeated contract extensions increased the scope of the support services considerably suggesting a successful arrangement [33, 34].

### 6.3    Illustration 3: Cathay Pacific Outsources to IBM

This is a case of an outsourcing arrangement that failed to deliver up to the initial expectations resulting in a contract termination. When Cathay Pacific brought in IBM to manage their desktop PCs and Data center, the arrangement was to "manage" the Desktop PCs and Datacenter and not take ownership. From the predictions of the framework, these assets being non-strategic yet needing investments, ought to have been transferred to IBM, yet they weren't. The contract was extended once in 2001 but by 2006, Cathay terminated the datacenter contract with IBM and handed it over to Unisys[8], along with the ownership of the datacenter as the framework suggests. While it not known what exactly caused the termination of the contract, and it would be presumptuous to assume that asset transfer was the sole reason for premature termination, it does not rule out the possibility that IBM not having the ownership rights to the desktop and datacenter assets could have played a part in reducing the incentives to invest in this relationship.

### 6.4    Illustration 4: Xerox Outsourced TO EDS[9]

When Xerox decided to outsource its failing IT department to EDS it was not to simply save money. The intention was to focus on new systems and strategies. This conforms with the predictions of RBV to outsource functions that were not sources of SCA. However, EDS was expected to invest in Xerox's mainframe. But having no

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[8]  `http://www.zdnet.com/cathay-pacific-dumps-ibm-for-unisys-1139256229/`

[9]  `http://www.computerworld.com/s/article/53272/The_Xerox_tragedy`

ownership rights over the assets EDS had little incentive or control over how to invest into the underlying assets in such a way as to recover a satisfactory share of the gains. As a result EDS was more likely to underinvest in this relationship as predicted by PRT. By 1999 EDS had written off $200 million in profits and filed a lawsuit against Xerox. When the legal battles were resolved by 2001, the contract was extended with the condition that EDS would now *host* the IT operations of Xerox. Such a move would have given them residual rights sufficient to induce investment incentives. This contract was still in place as of 2009. This case illustrates the applicability of proposition 1: commodity assets that need large investments, as the framework predicts, the ideal situation was for assets to transferred to the vendor. The arrangement met with issues of underinvestment when the actions were against the theoretical prediction but the arrangement seems to have been fruitful once the actions matched theory.

The last two decades has seen outsourcing grow to a $300bn industry  despite the concerns of the early adopters regarding loss of control of business-critical functions. These concerns were readily brushed away in light of the huge potential benefits of cost reduction and capability enhancement. Due to competitive pressure from both the clients and the vendors' side, IT outsourcing soon became the dominant strategy for accessing scarce resources at cost effective rates. However, the challenge of effectively transferring the IT functions to have it delivered by a third party to exacting standards on razor thin margins was soon noticed. The results of this rapid rush to outsourcing was seen in the horrifying statistic frequently reported by the business press that around half of all outsourcing were likely to fail [35].

# 7      Conclusion and Broader Implications

In recent times the practice has reached a certain level of maturity. However, except for a small set of best practices, there are few robust predictive guidelines to making sourcing decisions. This learning obtained largely through experience has helped manage traditional sourcing arrangements. However business models and technological complexity in sourcing information technology services continue to evolve and there is the danger that the ad-hoc learnings cannot extend to these emerging models and we are likely to see the same hurdles that we once saw in outsourcing.

It is interesting that the asset transfer decision, one of the essential problems that troubles traditional outsourcing is the central challenge in cloud computing, the newest and most promising of the emergent models for sourcing IT capability.

At the broadest level the concerns surrounding cloud computing lie along two dimensions, along the control dimension clients need to decide whether to opt for a public cloud, a private cloud or some hybrid combination of these and along the convenience dimension should firms subscribe from the cloud only the infrastructure, or the infrastructure and the platform or should they go all the way up and subscribe to the infrastructure, platform and application service. Therefore offering a guideline to help the outsourcing decision on whether to transfer assets or not offers an added benefit of being able to preempt the cloud computing decision challenge.

This paper was motivated by the observation that at times asset transfer accompanied outsourcing while at time it didn't. I attempt to develop an integrative framework combining RBV and PRT to address the motives for asset transfer. Each theory on its own only offered partial solutions. I interpret the essential arguments within RBV to identify services that are likely to be of lesser strategic importance and hence better candidates for outsourcing. However, having identified candidate services, I apply the predictions of PRT to understand the transfer of assets along with the services outsourced. Using four  examples, I illustrate the applicability of the framework. Therefore this paper is an attempt to provide a theoretical framework that is supported through examples of IT outsourcing to offer predictive guidelines to address newer sourcing models.

I am aware of the limitations in research design involving only published case studies However, data of the nature required for such analysis is rarely revealed. Notwithstanding the limitations of data, I believe this integrative framework has interesting insights to offer.

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## Appendix 1: Relevant Results from Hart, 1995

In order to highlight the application of the theory to the context of ITO, it is worthwhile considering the elements of the model used in Hart 1995.

Consider a trade arrangement where two owner-managed firms 1 and 2 possess physical assets asset 1 and asset 2, which are managed by managers Manager 1 and Manager 2. Firm 2 sells widgets to Firm 1 who then sells a final product incorporating the widget to Firm 1's end customers.



**Fig. 3.** Firm 2 sells a service to Firm 1 who incorporates this service to offer its product to the market

Firms could remain non-integrated implying that Firm 2 sells widgets in the spot market, and Firm 1 purchases widgets from the spot market; relationship specific investment do not contribute to an increase in payoffs.
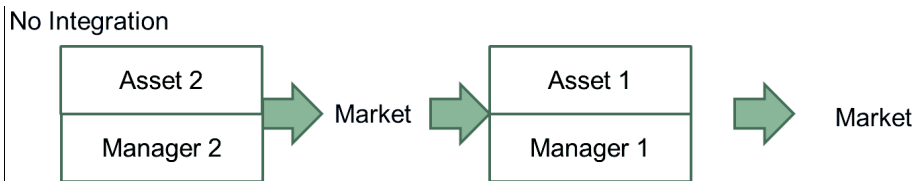


**Fig. 4.** The firms can chose to remain separate with no transfer of assets

The second case is where Manager 1 owns the assets of both firms. The third case is symmetrical to the second and Manager 2 owns the assets of both firms.
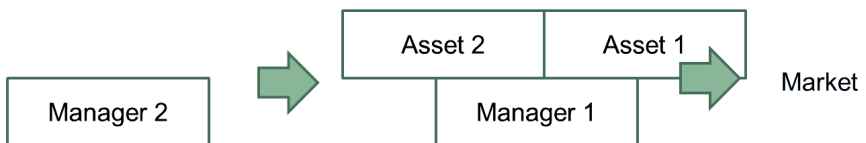


**Fig. 5.** Consider Firm 2 transferring asset 2 to firm 1 who then uses both assets to deliver the product to the market

Initially, Manager 1 invests an amount *i* into relationship specific investments and correspondingly Manager 2 invests an amount *e* into relationship-specific investments.[10] If trade occurs, Manager 1's revenue is a function of its investment *i,* which is higher than its revenue from using a general-purpose widget, procured from the spot market. The model adopts a Nash bargaining solution in order to distribute the trade surplus fairly.

The relevant results from the model are as follows: The first best outcome is achieved by ex-post negotiation. After the widget has been sold, both parties negotiate to split the surplus. However, this ex-post negotiation can reduce the ex-ante incentive to make the investment The intuition for this underinvestment is that when one firm invests more and receives a greater surplus, some of that surplus is dissipated by splitting the surplus with the other firm (as a result of the negotiation). Knowing ex-ante that the investor is not likely to benefit from the complete surplus, the investor has less than optimal incentive to invest.

Next, it is optimal for the vendor to own both the client's and the vendor's assets when any of the following four conditions apply. The first case being when the vendor's relationship specific investments are essential, i.e. in the absence of *i,* ownership of both firms physical assets offer no marginal advantage. Second, when the vendor's physical assets are 'strictly complementary', implying that the absence of the vendor physical assets make the client's physical assets completely unproductive. The third and the fourth situation apply to the clients relationship specific investments. The third case arises when *i*, the client's relationship specific investment, is constant and the fourth arises when *i* does little to improve the revenue the clients can achieve from the investment *i*.

The final relevant result is that if assets are independent then non-integration is optimal. In the model, the physical assets of both firms are considered to be independent if jointly owning both assets earns no more revenue for either firm than owning only their own asset. The intuition for this result is that transferring one firms physical assets (asset 1) to the other firm (Manager 2) offers no additional revenue while suppressing the incentive of the original owner (Manager 1) to invest in relationship specific investments (*i*). Thus, non-integration offers the same returns as integration but increases the likelihood of investments and thus offers a dominant solution.

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[10] Hart suggests that implicitly *i* and *e*  refer to investments in human capital rather than physical capital. However the model itself only requires that *i* and *e* to make the operations of managers Managers 1 and 2, respectively, more efficient.

# Measuring the Relative Efficiency of Global Delivery Models in IT Outsourcing

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**Abstract.** The days of IT offshore outsourcing are gone. Due to changing industry economics and intensified competitive pressures, common IT service delivery strategies are out-dated these days. We see an increasing shift from traditional single-location outsourcing to a more evolved and sophisticated global sourcing model. Within just a few years, leading IT providers ramped up their delivery capabilities in multiple geographically dispersed countries. This determines the development of a business strategy referred to as global delivery model (GDM). Despite the emergence of GDMs to become a preferred strategy in IT outsourcing, little is known about the performance of these novel network structures. Drawing upon the resource-based view of the firm, we offer a structured approach to evaluate relative efficiencies of GDMs and show how to compare these business models with each other.

**Keywords:** data envelopment analysis, global delivery model, resource-based view of the firm, relative efficiency.

## 1 Introduction

Within recent years, the information technology (IT) service market has been subject to tremendous changes. Gone are the days of the "hub-and-spoke" outsourcing model when India was the world's primary IT offshoring location. Starting in 2009, we saw an increasing shift from this single location outsourcing to sourcing across a range of global locations. Several market changes are driving this migration [1]. With the economic collapse in 2009 and a sudden downturn in IT budgets, a large number of clients start renegotiating rates with their service providers [2]. At the same time, a growing global demand for IT experts has led to salary increases on the Indian subcontinent. This forced IT companies to seek for alternative locations to ramp up their delivery capabilities. In addition, an increasing availability of skilled human resources in Eastern Europe, South America, and the Asia-Pacific Region along with the development of advanced communication technologies has made sourcing opportunities possible, which were impossible before.

The expansion of the global presence of international IT providers led to the emergence of a new business strategy. The so-called global delivery model (GDM) describes a "*service delivery and provision strategy where IT vendors integrate*

*multiple geographically dispersed resources such as skills, expertise, and knowledge through a network of onshore, nearshore, and offshore locations in order to maximize service delivery performance and to provide clients with seamless solutions*" [3]. This strategy combines an IT onshore with an IT offshore outsourcing model. Onsite service and support centers (SCs) in direct customer contact cooperate with a network of globally dispersed development centers (DCs) spread out across the globe.

Several streams of research are concerned with IT offshoring. For example, research on IT outsourcing (ITO) success identified best practices to design service level agreements and to improve delivery performance [4, 5, 6, 7, 8]. Furthermore, several issues related to relationship management have been studied [9, 10, 11, 12, 13, 14, 15] and the impact of cultural and country-specific factors on outsourcing performance has been examined [16]. Previous contributions on globally distributed work and development have focused on knowledge exchange processes between employees [17], socio-cognitive aspects of communication [18], and the impact of process-based learning on performance [19]. In addition, there has been some contribution to GDM success research. For instance, a study by Ang and Inkpen who investigated the impact of cultural intelligence on ITO success [20] as well as a single-case study by Mastakar and Bowonder who analyzed the GDM capabilities of an Indian ITO provider [21]. For detailed information on the status quo of ITO research, see Dibbern, Goles, Hirschheim and Jayatilaka as well as Lacity, Khan, Yan and Willcocks [22, 23].

These studies have enhanced our understanding of offshore-related challenges and the management of globally distributed IT projects. However, we still lack a deeper understanding of the how to compare existing GDMs with each other and how to evaluate their relative efficiency. Our study seeks to reduce this research gap by posing the following key research questions:

> (1) *How do the providers' global delivery resources impact market performance?*
> (2) *What is the relative efficiency of GDMs deployed by global ITO providers?*

In order to answer the first question, we developed a conceptual framework based on the resource-based view of the firm (RBV). With respect to the second research question, we assessed the appropriateness of several efficiency measurement approaches and decided to apply data envelopment analysis (DEA) in our study. DEA is a linear programming procedure, which compares production units in transforming multiple inputs into multiple outputs [24]. The fact, that this methodology is not very common in IT research, raises our third research question:

> (3) *Is DEA an appropriate method to evaluate relative efficiency of GDMs?*

The paper proceeds as follows. Drawing upon the RBV, we introduce our conceptual framework in the next section. Subsequently, we classify efficiency measurement approaches and introduce DEA methodology. To answer research questions two and three, we apply DEA to GDMs in IT outsourcing. The data collection procedure is

presented in chapter four. We provide the key findings in the fifth chapter of our study. Finally, we conclude with the theoretical and practical importance of our findings and by discussing implications for future research.

## 2        Conceptual Framework

Drawing upon the RBV, we study the relationship between the global delivery resources a provider deploys and its competitive position. RBV defines a resource as "*an asset or input to production (tangible or intangible) that an organization owns, controls, or has access to*" [25]. Such resources are mandatory to fulfill a firm's task and to generate competitive advantage [22, 26].

A considerable part of literature on RBV is concerned with the identification and description of corporate IT resources and their impact on companies [27, 28]. To the best of our knowledge, RBV has not been adapted to the context of global delivery so far. Thus, we first had to define the global delivery resources an IT provider owns. Barney classified three types of corporate resources [26]. Physical resources are assets like a company's technology and its' geographical position [26]. As described in the previous section, a GDM is a combination of an onsite and an offshore model. Onsite SCs provide local support for clients. They manage and coordinate ongoing relationships and acquire new customers. Globally dispersed teams in networks of DCs execute IT-related tasks. With such centers at multiple locations, providers are able to access several valuable resource markets and minimize country-specific risks. Thus, we presume that the most important physical GDM-resources of ITO companies are their global reach with SCs and DCs.

Organizational resources are assets such as a firm's internal coordinating systems as well as sophisticated processes to satisfy customers [26]. With the adoption of a GDM, the corporate culture needs to be aligned on global delivery of services. In order to overcome negative issues related to globally distributed work such as social boundaries [29], knowledge transfer problems [17], and cultural differences [15, 16], employees need extensive training and advanced service delivery processes need to be implemented [18, 19]. In general, there are two major difficulties in assessing the quality of such organizational GDM resources. First, processes are intangible in nature. Thus, they are hard to observe, quantify and measure from outside an enterprise. Second, they are difficult to compare between different companies. Thus, we have to rely on common quality signals like CMMI and ISO certifications as well as expert ratings.

Human resources are skills and capabilities of employees within an enterprise [26]. They include IT-related technical and managerial knowledge [27, 30] as well as not IT-related soft skills like employees' cultural intelligence, their experience and loyalty, as well as language skills [31, 32]. Widely used quality signals for IT-related skills of employees are the Six Sigma method, the ITIL framework, and the P-CMM certification. Like organizational GDM resources, comparable data on soft skills are difficult to gather. Thus, we recommend relying on expert rankings.

IT providers differentiate themselves on the basis of their GDM. Providers that are able to combine physical, organizational, and human resources in an effective manner can create superior capabilities that contribute to high performance outcomes. In our study, we distinguish between intermediate and final performance outcomes (see figure 1).
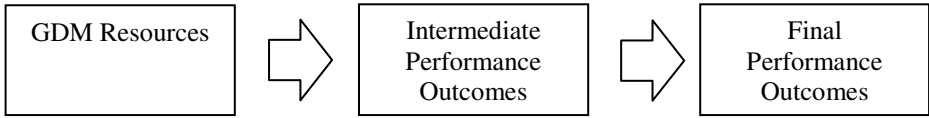


**Fig. 1.** Conceptual Framework

We measure the intermediate performance outcome by customer satisfaction. This construct is defined as "*a positive affective state resulting from the appraisal of all aspects of a firm's working relationship with another firm*" [33]. Customer satisfaction is widely used for assessing the success of ITO [11, 12, 13, 34, 35]. It has a positive impact on customer loyalty [36, 37] and increases the intention to continue and expand an engagement with a provider [11, 38, 39]. Moreover, satisfied clients tend to a positive word-of-mouth which supports the acquisition of new customers [37, 38].

Against this background, we recommend to measure final performance outcomes by these positive effects attributed to customer satisfaction such as market penetration, customer retention, customer loyalty, changes in the development of sales as well as the providers' achieved business performance measured either by objective or perceptual indicators [40].

## 3      Methodology

In answering our second research question, we first have to clarify the concept of efficiency. In economic literature, there are different understandings of this term. In general, efficiency is defined as the ratio of outputs to inputs. Thus, efficiency is a quality indicator measuring the performance of transforming inputs into outputs. Due to the fact that the aim of this study is to evaluate relative efficiencies, we describe the term in line with the definition of technical or rather Pareto-Koopmans efficiency. A production unit is called efficient if one of the following conditions is met [41]:

1.   It is not possible to reduce any input of this unit without increasing at least one other input or reducing any output.
2.   It is not possible to increase any output of this unit without reducing at least one other output or increasing any input.

## 3.1     Efficiency Measurement Approaches

Productivity measurement approaches can be classified into five categories (see figure 2) with respect to their consideration of inputs and outputs [42]. Class 1 and class 2 evaluation techniques are pure approaches that compare one input or one output against performance goals [42, 43]. Due to the fact, that they do not compare inputs with outputs, they are not appropriate for our endeavor. Class 3 approaches consider inputs and outputs simultaneously. These methods offer the opportunity to rank-order units under observation, but do not explicit compare one unit with its peers [42].
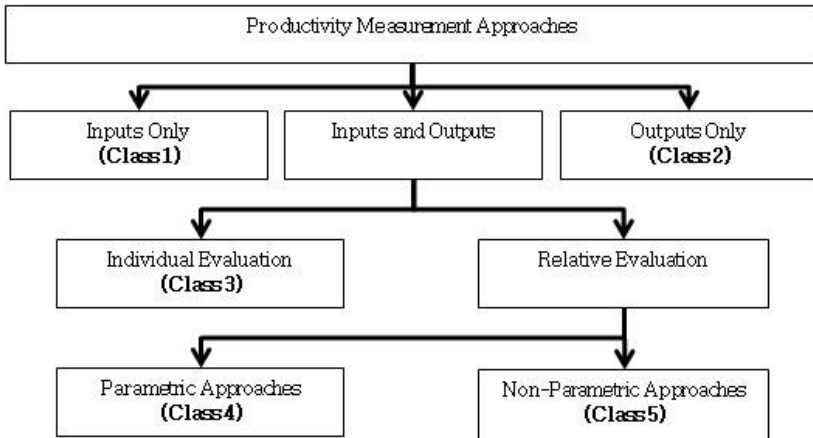


**Fig. 2.** Productivity measurement approaches according to Boles et al. [42]

There are two types of approaches to evaluate relative efficiencies. Non-parametric models like data envelopment analysis and free disposal hull differ from parametric models, such as regression analysis and stochastic frontier analysis in that they do not rely on an a priori defined shape of the production function. An efficient frontier is estimated based on observed data only [44].

In general, both types of relative evaluation techniques are applicable to assess the relative efficiency of GDMs. In this paper, we decided to apply DEA. This methodology provides for the following advantages compared to non-parametric approaches: First, due to the fact, that an efficient frontier is determined based on observed data instead of relying on a priori specified structural form [45], DEA is less prone to specification errors if the actual shape of the production function is unknown [46]. Second, DEA is able to handle multiple inputs and multiple outputs simultaneously [24]. The above-mentioned parametric approaches can only consider one dependent variable in efficiency measurement. Finally, analyzed DMUs only have to be functional homogenous. That means, they undertake the

same activities (inputs) to produce comparable products or services (outputs) in varying quantities [47].

Due to the attractive properties of DEA, this approach can be applied to different contexts such as efficiency evaluation of institutions, subsidiaries, and processes [24, 48, 49] and to support corporate decision making in outsourcing and vendor selection [50, 51]. In IT research, DEA was applied to assess the impact of investments in IT on the development of countries [52] and on corporate productivity [53]. Further, the relative efficiency of e-commerce users [54], ERP software products [55, 56], and web sites [57] was analyzed.

## 3.2    Data Envelopment Analysis

DEA is a non-parametric evaluation technique of production units, referred to as decision making units (DMUs). The proposed methodology can be described as follows. Consider a situation, where DEA is applied to assess the relative efficiencies $\theta_i$ of $i = 1,...,n$ DMUs in transforming $j = 1,...,k$ inputs $x_j$ into $h = 1,...,m$ outputs $y_h$. Each DMU is described by an input-output configuration $(X_i, Y_i)$ with a vector of observed inputs $X_i = (x_{i1}, x_{i2},..., x_{ik})$ and outputs $Y_i = (y_{i1}, y_{i2},..., y_{im})$ [58, 59]. DEA assumes that the underlying production possibility set, denoted by $\Psi = \{(X,Y)|Y \geq 0$ can be produced from $X \geq 0\}$, satisfies the following postulates [24, 58]:

1.  **Free disposability.** If $(X_i, Y_i) \in \Psi$ and $X_i' \geq X_i$, then $(X_i', Y_i) \in \Psi$ and if $(X_i, Y_i) \in \Psi$ and $Y_i' \leq Y_i$, then $(X_i, Y_i') \in \Psi$ [60]. This postulate asserts that if an output vector $Y_i$ can be produced by an input vector $X_i$, then, it can be produced ceteris paribus by employing more of at least one input (overuse of inputs) or by decreasing at least one output (underproduction of outputs) [57].

2.  **Convexity**. If $(X_i, Y_i) \in \Psi$ and $\lambda_i \geq 0$ are nonnegative scalars such as $\sum_{i=1}^{n} \lambda_i = 1$, then $\left( \sum_{i=1}^{n} \lambda_i X_i, \sum_{i=1}^{n} \lambda_i Y_i \right) \in \Psi$ [61].

3.  **Constant returns to scale** (ray unboundness). If $(X_i, Y_i) \in \Psi$ then $(\eta X_i, \eta Y_i) \in \Psi$ for any $\eta > 0$ [58, 61].

4.  **Minimum extrapolation.** $\Psi$ Is the intersection set of all $\overline{\Psi}$ satisfying postulates 1, 2, and 3 and subject to the condition that each of the observed vectors $(X_i, Y_i) \in \overline{\Psi}$, $i = 1,...,n$ [58, 61].

The identification of DEA efficiencies is equivalent to the identification of lowest input with the highest output. The relative efficiency $\theta_o$ of a particular DMU $o \in i$ is obtained by solving the following fractional programming problem [24]:

$$\min_{\lambda_{io}} \theta_o \qquad (1)$$

subject to

$$\sum_{i=1}^{n} \lambda_{io} y_{hi} \geq y_{ho} \qquad \forall h = 1,...,m$$

$$\sum_{i=1}^{n} \lambda_{io} x_{ji} \geq \theta_o x_{jo} \qquad \forall j = 1,...,k$$

$$\lambda_{io} \geq 0 \qquad i = 1,...,n$$

This program is computed independently for each of the $i$ DMUs to determine the optimal weights $\lambda_{ii}$ and generate individual efficiency scores $\theta_i$ with values ranging from 0 to 1.00. A DMU with an efficiency score of $\theta_i = 1.00$ is classified as efficient and is therefore a part of the efficient frontier. Inefficient units receive a value of $0 \leq \theta_i < 1.00$, where $1.00 - \theta_i$ shows the individual degree of inefficiency of DMU $i$.

## 4    Data Collection

We conducted a study to evaluate the relative efficiency of GDMs deployed by global ITO providers (research question 2) and to test the appropriateness of DEA for this endeavor (research question 3). In order to apply DEA, we first need to define the population of DMUs. At the time of the data collection, we identified 30 IT providers that had implemented a GDM strategy. Vendors with less than three globally dispersed DCs were not included in our analysis. We ask all 30 providers to take part in our study. Of these, 22 companies agreed to participate.

Once the DMUs were identified, we had to collect data on their inputs and outputs. All data for our study were gathered in cooperation with an independent international market research company. In this study, we only considered the intermediate outcome dimension. We issued an online survey to collect data on customer satisfaction in an international expert panel of large, small, and medium-sized ITO clients of different industrial sectors. We assessed customer satisfaction with

(1)    the delivery performance against the contracted service level agreements
(2)    the relationship management
(3)    the ability to deliver innovation and continuous improvement
(4)    the price competitiveness against performance
(5)    the flexibility with respect to price model evolution, volume and scope changes.

We measured these items using a 5-point Likert scale from 1 (very dissatisfied) to 5 (very satisfied). Out of the 22 IT providers, four companies achieved less than 75 customer responses and were therefore excluded from our analysis. Thus, our final dataset consists of 18 IT providers with six vendors that are headquartered in Europe (EU), six in India (IN) and six in the United States of America (US).

Data on input variables were collected by telephone interviews with ITO providers' senior management staff. We were able to gather comparable data on seven global delivery resources. As physical GDM resources, we include the global reach of service centers and the global reach of delivery centers describes the number of countries in which a provider operates such centers. With respect to organizational resources, we consider vendors' CMMI-level and ISO certifications as well as a rating of providers' GDM process maturity by experts of our cooperating partner. Due to inconsistent responses on human assets, we could not include a single IT-related resource in our study. However we were able to gather data on employee loyalty and to consider an expert rating of employees' language skills. Both subjective ratings were measured using a 5-point Likert scale from 1 (very bad) to 5 (very good).

## 5      Results

We calculated the relative efficiency of the 18 GDM providers in our final dataset using DEA (see table 1). Out of these, nine vendors (50.00%) were classified as efficient. In each region, three providers (EU1, EU2, EU3, IN1, IN2, IN3, US1, US2, US3) achieved an efficiency score of $\theta_o = 1.00$. The remaining nine providers were classified as inefficient with individual inefficiencies ranging from $1 - \theta_{US4} = 0.0082$ (0.82%) to $1 - \theta_{IN5} = 0.3316$ (33.16%). The average efficiency across all units in the dataset is 91.11%. The lowest theta value had been assigned to the Indian vendor IN5. In this study, we will not go into more detail on each provider's individual efficiency but present three provider clusters in order to derive implications for future research.

**Table 1.** DEA efficiency scores

| DMU | Efficiency | DMU | Efficiency | DMU | Efficiency |
|-----|-----------|-----|-----------|-----|-----------|
| EU1 | 1.0000 | US1 | 1.0000 | IN1 | 1.0000 |
| EU2 | 1.0000 | US2 | 1.0000 | IN2 | 1.0000 |
| EU3 | 1.0000 | US3 | 1.0000 | IN3 | 1.0000 |
| EU4 | 0,7111 | US4 | 0.9918 | IN4 | 0.9532 |
| EU5 | 0.9786 | US5 | 0.7382 | IN5 | 0.6684 |
| EU6 | 0.7065 | US6 | 0.8372 | IN6 | 0.8155 |

### 5.1      Cluster 1: Deployment Strategy

The providers in our study differ with respect to their staff assignment. Four providers rely on an onshore staffing strategy, with more than two thirds of DC-headcount in Western Europe and North America. Of these, three providers are headquartered in Europe. Nine vendors rely on an offshore staffing strategy, with more than two thirds of the DC-employees in offshore locations like Africa, the Asia-Pacific, Eastern Europe, and South America. All six Indian ITO companies are part of this cluster. The remaining five providers rely on a balanced staffing strategy. The results presented in

table 2 indicate that efficiency and customer satisfaction are substantially higher in offshore and balanced setting. Four out of the five providers in the latter cluster were classified as efficient.

**Table 2.** Average DEA efficiency scores and average customer satisfaction with respect to providers' staff assignment

| Staffing | Group size | Average efficiency score | No. of efficient providers | Average customer satisfaction score |
|---|---|---|---|---|
| Onshore | 4 | 0.8137 | 1 | 3.2 |
| Balanced | 5 | 0.9476 | 4 | 3.7 |
| Offshore | 9 | 0.9342 | 4 | 4.0 |

These findings indicate, that providers' deployment strategy impacts global delivery performance. The vendors in the offshoring and the balanced group primarily source their offshore human resources from the Indian subcontinent. Looking at the five output dimensions, we found that the offshore cluster achieves considerably higher customer satisfaction with price competitiveness against performance (4.0) than providers with a balanced (3.2) and an onshore staffing strategy (2.8). Members of the worst performing onshore group source most of their DC headcount in Eastern Europe. Thus, we propose:

*Proposition 1: India provides superior human GDM resources at low costs.*

### 5.2    Cluster 2: Business Familiarities

Business familiarities are defined as "*the extent to which a provider has prior experience and/or understanding of the client organization's business and technical contexts, processes, practices, and requirements*" [23]. Previous studies found, that business familiarities positively impact ITO success [23, 62].  In our study, we took a closer look at the providers' service delivery background. Despite the fact that all vendors in our study offer a wide range of services, they differ with respect to their service offering history. Eight providers were former system integrators (System), and had been "*responsible for the overall system design and integrating product and service components supplied by a variety of external suppliers into a functioning system*" [63]. The business of six vendors was the development and distribution of customized enterprise software (Software). Additionally, four vendors used to be pure IT infrastructure service providers (Infrastructure).

We found that the service delivery background impacts global delivery performance. Software vendors and system integrators received substantially higher DEA scores than providers in the infrastructure cluster (see table 3). With an average customer satisfaction score of 4.2, vendors in the software cluster stand out from the rest. Five out of six companies within this group are classified as efficient.

**Table 3.** Average DEA efficiency scores and average customer satisfaction with respect to providers' background

| Background | Group size | Average efficiency score | No. of efficient providers | Average customer satisfaction score |
|---|---|---|---|---|
| Infrastructure | 8 | 0.8317 | 2 | 3.4 |
| Software | 6 | 0.9693 | 5 | 4.2 |
| System | 4 | 0.9830 | 2 | 3.9 |

We argue that providers differ with respect to their business familiarities. Software vendors and system integrators are used to provide customized solutions to their clients'. Thereby, they gain deep insights about specific needs and requirements of their clients. In contrast to this, infrastructure service providers offered tangible and standardized IT products and services like hardware and network technologies. Such services require less domain-specific knowledge and less interaction with customers. We propose:

*Proposition 2: Software vendors and system integrators have higher business familiarities than infrastructure service providers.*

## 5.3    Cluster 3: Global Delivery Headcount

GDMs are networks of globally dispersed DCs in which customer-related services are provided. One major advantage of such networks is their possibility to benefit from economies of scale. Due to the fact that scalability grows in the number of employees, we assume a positive impact of the headcount on global delivery performance. Four vendors in our data set are large providers with a delivery headcount of more than 100,000 employees (Large). Eight providers employ between 20,000 and 100,000 people in their global delivery centers (Medium-sized). The global delivery workforce of the remaining six ITO companies is less than 20,000 (Small).

In our study, the medium-sized cluster received the highest average efficiency score followed by the cluster of the small companies (see table 4). Only one vendor in the large group is classified as efficient. The fact that these companies achieved poor efficiency values in comparison to other GDM vendors can be attributed to their greater input usage.

**Table 4.** Average DEA efficiency scores and average customer satisfaction with respect to providers' delivery centre headcount

| Headcount | Group size | Average efficiency score | No. of efficient providers | Average customer satisfaction score |
|---|---|---|---|---|
| Large | 4 | 0.8400 | 1 | 3.9 |
| Medium-sized | 8 | 0.9529 | 4 | 3.9 |
| Small | 6 | 0.9029 | 4 | 3.5 |

However, when looking at the output values, we found that large and medium-sized providers outperform small vendors. Companies with large delivery headcount received a remarkably higher customer satisfaction with the delivery of innovation and continuous improvement (4.0) than their small (3.3) and medium-sized (3.5) competitors. Therefore, we propose:

*Proposition 3a: The size of a delivery center positively impacts the ability to deliver innovation and continuous improvement.*

Vendors' ability and willingness to change service level agreements during an ongoing relationship is one key success factor in ITO [64, 65]. Our study found that providers' contract flexibility is negatively correlated (-.29) with its' global delivery workforce. This result leads us to our next proposition:

*Proposition 3b: The size of a delivery center negatively impacts contract flexibility.*

## 6      Conclusion

In this paper, we offer first insights into global deliver performance by posing three research questions. With respect to our first research question, we developed a conceptual framework for evaluating the relative efficiency of GDMs. We specified a set of physical, organizational, and human GDM resources, drawing upon the RBV. Due to the fact that we conduct a non-parametric efficiency measurement, we were not able to empirically test their impact on the intermediate outcome customer satisfaction. We aim to address this limitation in our future research in order to identify capable input variables and to refine our conceptual framework when needed.

In order to answer our second research question, we conducted a relative efficiency measurement in the area of global delivery. Despite the fact, that we were not able to collect data on all GDM resources defined in our conceptual framework, this study provides valuable initial insights into global delivery performance. The findings presented in cluster 1 and 2 might be indicators for the existence of valuable human resources on the Indian subcontinent. A huge body of literature is concerned with IT offshoring to emerging countries [22]. Over a long period of time, India was the world's primary offshoring country [20]. Thus, little research is concerned with an investigation of other global locations. However, with the emergence of GDMs to a preferred delivery strategy in ITO, we assert that a broader investigation and comparison of different global locations is necessary. Based on the findings in our study, we developed four propositions, which we aim to test in our future research.

Regarding our third research question, we found that DEA is a sufficient approach for measuring performance in global delivery, if the following conditions are met. First, DEA does not test for statistical dependencies between variables. Thus, as mentioned above, we aim to analyze the relationship between inputs and outputs in a subsequent study. Second, the proposed approach measures relative efficiency of DMUs based on observed data only. Therefore, to make general statements about performance within a specific market, all DMUs have to be considered in DEA [66]. Third, as we have pointed out, the ITO market is changing rapidly. We aim to address dynamic aspects in our future research by calculating the Malmquist Index a  DEA-based approach that measures variations in productivity with respect to a base year [67].

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# Understanding Innovation in Outsourcing Services

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## 1 Introduction

Recent years have witnessed an expansion in service industries such as finance, travel and retail. Firms in the services have shifted their traditional occupation with products to consider how value can be created and appropriated in the service industry [1]. In particular, information technology (IT) and IT-enabled business services have become central to a firm's ability to deliver value to its customers, driving firms to seek ways to improve their services and maintain their competitive position. In this regard, the last ten years have witnessed significant growth in the outsourcing industry which shifted from focus on low cost simple tasks such as coding to end-to-end delivery of services that range from IT services and customer services to more complex business services such as Finance and Accounting, Human Resources, Procurement, and knowledge-intensive services such as customer analysis and research services [2].

While the early years of IT and business process outsourcing were mainly characterized by a quest for costs savings [3-4] and focus on core competences [5], recent evidence suggests that presently client firms seek to achieve added value from outsourcing [6] by accessing suppliers' competences [e.g. 7, 8]. Mol (2005: 571) argues that 'firms are increasingly relying on partnering relationships with outside suppliers that can act as an effective substitute to the internal generation of knowledge and innovation'. Similarly, Linder et al [9] and Weeks and Feeny [10] argue that client firms rely on external suppliers in the search for new ideas. More recently, accepting that innovation is outsourced and offshored, Lewin et al [11] studied the determinants driving firms to offshore innovations to only conclude that firms are entering a global race for talent in which solutions will be sought wherever skills are available.

While the literature has identified multiple factors affecting the innovativeness of a firm such as the Research & Development (R&D) base of the firm, specialization, managerial attitude towards change, slack resources and internal and external communications [12], innovation as a dependent variable in the context of outsourcing services has been poorly understood. The few studies that have explored innovation in outsourcing have either considered innovation to be an independent

variable [13] or provided anecdotal evidence of innovation achieved in such settings based on a small number of case studies [7, 9-10], which shed very little light on the factors affecting innovation in IT and business process outsourcing. In this regard, it is not clear which organizational factors affect the ability of a client firm and a supplier to achieve innovation.

Therefore, the aim of this research is to understand how a client firm can benefit from innovation generated by its outsourcing supplier. We focus on radical innovation and consider the role of contract type and client-supplier relationship as the key variables affecting the client firm's ability to achieve radical innovation in their outsourcing engagement.

The paper is organized as follows: first we review the literature on innovation in the context of IT and business services outsourcing of; then we explain the role of contract types and the client-supplier relationship and develop a set of hypotheses connecting these factors with radical innovation as an outcome of an outsourcing engagement. This is followed by an explanation of methods and results. Then we discuss our findings in the light of the existing literature. The paper concludes with theoretical and practical contributions.

## 2      Literature Review and Hypotheses

### 2.1      Innovation in the Context of Outsourcing Services

Outsourcing of IT and business services has been recognized as one of the risks leading to the loss of innovative capabilities inside a client's firm [10]. Past studies, however, have persistently anticipated that outsourcing will deliver new ideas and value to both business operations and strategic objectives [4, 13]. Despite the above risk, innovation is one of the promises of outsourcing; however, one which is poorly understood. For example, most studies in the outsourcing literature have provided anecdotal accounts of instances in which innovation has or has not been achieved [e.g. 7, 10, 14]. Further, in the few studies in the outsourcing literature that attempted to model innovations, this concept was perceived to be an independent variable [e.g. 15] rather than a possible outcome of an outsourcing project [13].

The innovation literature distinguishes between various types of innovations. Undoubtedly, the vast majority of studies on innovation have adopted the concepts of incremental and radical innovations as central to understanding innovation [e.g. 16, 17-18]. While the conceptualization of radical and incremental innovation was originated in the product development and innovation literature, several recent studies originated in the service innovation literature have adopted the concepts of radical and incremental innovations, using similar definitions [e.g. 19, 20]. Thus, in the context of service industries incremental innovation implies service line extensions [21], small adaptations and improvements to existing services and improvements in efficiency of services [22]. Radical innovations, on the other hand, are designed to meet the needs of emerging customers or new markets. In this respect, radical innovations may result in new service lines [21], entering new markets [23] and introducing new distribution channels [22].

Most firms tend to excel in incremental innovations and fail to achieve radical innovations. In the context of outsourcing, incremental innovation can be achieved when the supplier focuses on quality improvements in the outsourced IT or business services [10, 24]. For example, Weeks and Feeny (2008), whose 'IT operational' and 'business process' innovations are incremental innovations and 'strategic innovations' correspond with the definition of radical innovation, show that the vast majority of innovations achieved in outsourcing projects are mainly at the incremental innovation level. Further, when examining cases of radical innovations in outsourcing, they conclude that both client and supplier tend to struggle to successfully innovate. Similarly, Quinn (2000) provides ample examples of client firms engaging in outsourcing innovation where the vast majority of these projects resulted in incremental innovations. Lacity et al (2010) confirm the emphasis on incremental innovation by suggesting that among the main drivers to outsource are improvements in processes and services [25], achieving change [26] and improvements of the delivery time [27] ). They conclude that 'truly strategic reasons for outsourcing IT have been relatively under-studied' [13 :406]. Consequently, radical innovation becomes the key challenge in outsourcing and thus will be the focus of this study.

There has been some research on the factors affecting radical innovations in organizations. The few studies that examined the antecedences of radical innovation have mainly focused on organizational factors such as structural complexity [28], complementary assets and the effect of environmental factors [29], and the diversity of knowledge [30]. Focusing on the service industries, Oke [20] found that innovation strategy, human resource management, creativity and ideas management, selection and portfolio management, and implementation are significantly related to radical innovation. While these findings are of value to service firms that generate radical innovation internally, these factors have little relevance to settings of outsourcing.

In outsourcing arrangements, client and supplier firms mainly rely on a contractual agreement [31] to agree upon the work that will be carried out and the set of criteria which will assess the quality of work performed by the supplier. Indeed, the most commonly found contracts are fixed-price or time and materials which pose different risk levels for the client and the supplier depending on the nature of the business or IT service outsourced [32]. In this regard, fixed-price contracts were found to deliver better quality than time and materials as suppliers tend to staff such projects with trained personnel to ensure risk mitigation [33]. While the contract is a formal mechanism 'legally binding' client and supplier firms, as outsourcing commences, the client and supplier tend to develop a relationship which may enhance outsourcing performance, including radical innovation.

In the next section, we elaborate further on the relationship between contract types and the ability to achieve radical innovations in outsourcing projects.

## 2.2    Contract Types and Radical Innovation

The IS outsourcing literature has examined the role of contracts in outsourcing from various angles [e.g. 31, 34]. For example, Platz and Temponi [35] studied the key

challenges associated with outsourcing contracts. Another stream of research focused on understanding which contract types clients should apply in outsourcing engagements. Gopal and Koka [33], who examined the different incentive structures built into contract types, identified *time and materials* and *fixed-price contracts* to be the key types applied in outsourcing engagements. They found out that service quality in fixed-price contracts is higher than in time and materials contracts because '"[...] the power of incentives and the ability to measure, even imperfectly, the progress made by the supplier on a project provides appropriate motivations for managers to pay attention to all important aspects of a services engagement through the project life cycle'. Gefen et al [31] also consider time and materials and fixed-price contracts to be the main contractual approaches in outsourcing. Their study concludes that there is a strong connection between business familiarity and clients' tendency to prefer time and materials contracts. In other words, the higher the suppliers' business familiarity with the clients' business, the more likely the client will choose to use a time and materials contract. From the supplier side, Gopal and Sivaramakrishnan [32] argue that fixed-price contracts will be the suppliers' preference for larger and longer outsourcing projects that require large teams and a time and materials contract for scenarios in which there is a high risk of employee attrition. While time and materials and fixed-price contracts have been identified as central to outsourcing engagements, there has been growing evidence that client firms and suppliers set up partnership contracts in the form of *joint ventures* to address other business objectives. In this instance, the partnership contract defines how client and supplier firms contribute resources to the new venture and how profits will be shared [36-37]. Further, the partnership contract articulates the objectives of the joint venture, outlines the capital requirements and physical assets involved, and addresses issues pertaining intellectual properties and profit sharing. Research found that the main objectives behind forming a joint venture are overcoming entry barriers into new markets, speeding up entry strategy to new markets and technologies, achieving economies of scale, managing risk sharing and getting access to complementary assets (tangible and intangible) located outside the firm's boundaries [36, 38].

Considering that radical innovation projects present a high degree of uncertainty and complexity regarding the ability to a priori define the expected outcomes and precisely predict the costs involved, using fixed-price contracts, which are rather strict and clearly defined, may inhibit the flexibility needed when uncertainty arises. Time and materials contracts may offer flexibility when uncertainty is high; however, such contracts also elevate concerns regarding suppliers' opportunism under uncertain conditions [39-40]. A partnership contract in the form of a joint-venture contract has been reported to be highly successful in economic terms [41] as such contracts offer a joint risk approach and the potential to appropriate value from the innovation for both client and supplier. We therefore hypothesize the following:

*H1: A fixed-price contract will result in less radical innovation while a joint-venture contract with profit sharing will result in more radical innovation.*

## 2.3    Client-Supplier Relationship and Radical Innovation

There is general agreement in the literature that client-supplier relationship improves outsourcing outcomes (Lacity et al, 2010; Kishore et al, 2003). In this regard, the client-supplier relationship represents the connections between staff from the supplier and client side that result in information and knowledge exchanges [42]. Jansen et al (2006 :1663) explain that such connectedness concerns linkages between people and comprises a more voluntary mode of coordination than hierarchical structure. Client-supplier relationship as an independent variable has been studied in the outsourcing literature (Lacity et al, 2010) using twenty-five different factors, among them most frequently studied were effective knowledge transfer [e.g. 43, 44], cultural distance [e.g. 45] and trust [e.g. 46, 47]. Several studies also emphasized client-supplier relationship, focusing on the role it plays when innovation is sought as an outcome of the outsourcing project [39, 48-50]. For example, Weeks and Feeny (2008) argue that the relationship between client and supplier will become instrumental in building the supplier's business process design, which is the learning capability of the supplier, and client-industry knowledge, which is the supplier's pool of business solutions, both imperative capabilities for radical and strategic innovations [10]. In this regard, radical innovation as an outcome of the outsourcing engagement requires a strong relationship between the client and supplier to enable the supplier to learn about the client's business and the solutions that will transform the client's business. The exchange of information and knowledge between supplier and client employees will facilitate the creation of new knowledge, which is the source of radical innovation. Thus, we hypothesize the following:

*H2: The more the outsourcing engagement is based on a client-supplier relationship, the more radical innovation will be achieved.*

## 2.4    Contract Types, Client-Supplier Relationship and Radical Innovation

Both contract types and client-supplier relationships have been examined as independent variables of outsourcing outcomes [51-52]. Research has established that contract type affects outsourcing outcomes [53]. In a similar vein, relationship characteristics have been positively associated with outsourcing outcomes (Lacity et al, 2010). Further, several studies found that contractual governance interacts with relational governance [41, 54-55]. For example, Goo et al [56] found out well-structured SLAs have significant positive influence on the various aspects of relational governance in IT outsourcing relationships. While the IS literature has advanced our understanding regarding the links between contractual and relational governance, it is not yet clear how contract types affect client-supplier relationship and consequently radical innovation. In particular, in our partnership-based contracts require trust and cooperation [10], hinting at close relationships between client and supplier. Similarly, time and materials contracts are associated with vendor's business familiarity of the client, suggesting an intimate relationship between the client and the vendor (Gefen et al. 2008). Fixed-price contacts are believed to be based on a

transactional approach; yet their impact on client-supplier relationship is unclear. We therefore hypothesize the following:

*H3: A partnership-based and time and materials contract will lead to stronger client-supplier relationships.*

*H4: The strength of the client-supplier relationship mediates the effect of contract type on radical innovation.*

# 3    Methods

## 3.1    Data Collection

The data collection involved high level executives in the IT and business fields that engaged in at least one outsourcing arrangement. The targeted firms included a mix of industries and sizes to represent variation in the economy. The survey was conducted in late 2010. Once companies had been screened to meet the study criteria, over 2000 executives were contacted and 248 fully completed the survey instrument, resulting in a response rate of 12.5%. Forty-seven percent of the interviews were collected by telephone and the remaining 53% were conducted via an online survey.

To minimize potential biases, the respondents were assured that their responses and identities would remain confidential and that only aggregate information would be published. In addition, to minimize respondent bias, we only surveyed those who participate in the decision making related to the topic of the survey [57]. We specified that respondents be individuals who are involved with the decisions to outsource. A 'don't know' response category was added to each question to minimize the risk of obtaining inaccurate responses from participants who may not know the answers to certain questions. This would avoid a respondent feeling pressured to respond to a question which they did not feel confident to answer.

Overall the respondents were divided between several industries. Banking and finance represent 19% of the sample. Insurance comprises another 15% of the sample. Internet and media represent an additional 16% of the sample. Manufacturing represents 19% of the sample. Retail represents 16% of the sample and finally telecommunications represents 15% of the sample. Half of the firms are located in the United Kingdom. An additional 10% are from each of the following regions: Benelux, Germany, Nordics countries, France and Switzerland. Forty-nine percent of the sample had between 500 million and 1 billion dollars in revenue the previous year; 26% had between 1 billion and 5 billion dollars in revenue the previous year, and the remaining 25% had over 5 billion dollars in revenue the previous year. The respondents are top management at their firms: 40% of the respondents represent their function at the executive level. An additional 26% of the respondents have global responsibility for their function. Finally, 38% have national responsibility for their function.

## 3.2    Measurement

This study used previously validated scales from the literature, but since the scales were oriented towards intra-organizational processes, they were adapted to fit outsourcing arrangements. The appendix provides the actual wording of the questions used in the survey.

We assessed the construct validity of all items pertaining to our constructs through exploratory and confirmatory factor analysis (CFA). Exploratory factor analysis of all items (dependent and independent variables) indicates a two factor structure. Each item loaded on its intended factor (all factor loadings were above 0.65 with cross-loadings lower than 0.31), and all factors had eigenvalues greater than one. An integrated CFA on all items (with each item constrained to load on the factor for which it was the proposed indicator) yielded a model that fits the data well ($\chi 2/df$ = 3.21, goodness-of-fit index (GFI) = 0.88, comparative fit index (CFI) = 0.85, and a root-mean-square error approximation (RMSEA) = 0.06). Item loadings were as proposed and significant ($p<.001$).

Radical Innovation: We measured radical innovation using the scale developed by Jansen et al (2006) ($\alpha$=.812). This measure is designed to measure the extent to which organizations depart from existing knowledge and pursue innovations. We adapted this measure to incorporate innovation with outsourcing partners rather than solely internal processes.

Client-Supplier Relationship ($\alpha$=.801) was measured using a five-item scale adapted from Jaworski and Kohli [58]. They developed this scale to measure the extent to which employees were networked to various other levels of the hierarchy. This scale was used in other studies (e.g. Jason et al, 2006). We have adapted the measure to include cross boundary connections between the client and supplier firms.

## 3.3    Independent Variables

Type of contract: In order to test how the fee structure of the arrangement influences both the client-supplier relationship and the degree of innovation, we include measures on types of contracts the organizations used with their outsourcing partners. The type of contract considered to have the highest degree of a fixed fee structure is the fixed-price contract, followed by time and materials contract and the type of contract with the least fixed fee structure is the joint-venture with profit sharing.

## 3.4    Control Variables

In the empirical study, we controlled for possible confounding effects by including various relevant control variables[1]. Three types of outsourcing arrangements were

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[1] We attempted additional controls including industry, country and size of the company, but none of them had a significant effect on the outcomes.

considered: business processes, IT development processes and IT application maintenance. Of the types of outsourcing used, 74% of the respondents indicated they outsource business processes, 80% outsource IT development and 88% indicated that they outsource IT application maintenance.

## 4       Analysis and Results

Table 1 presents descriptive statistics and the correlations for the study variables. Table 2 presents the results of the linear regression analyses for client-supplier relationship and radical innovation.

The baseline models (Models 1 and 3) contain control variables. Models 2 and 4 introduce the effect of the type of contract on the client-supplier relationship and radical innovation. Model 5 tests the individual effect of client-supplier relationship. Model 6 tests if the client-supplier relationship mediates the relationship between the type of contract and radical innovation.

Model 4 tests hypothesis 1, which argues that the type of contract affects the degree of radical innovation achieved in outsourcing. There is support for hypothesis 1. Using a fixed-fee contract has a negative, but not significant effect on radical innovation ($\beta$=-.05, ns). Using a time and materials contract has a small positive, but marginally significant effect on radical innovation ($\beta$=.12, p < .1). The strongest effect on radical innovation was from a joint-venture with profit sharing contract ($\beta$=.21, p < .01). Using this type of contract has the strongest positive and significant effect on radical innovation.

In order to test the effect of the client-supplier relationship on the degree of radical innovation achieved in outsourcing (H2), Model 5 was estimated. This hypothesis is supported; there is a significant positive effect of client-supplier relationship on radical innovation ($\beta$=.38, p < .01). The stronger the client-supplier relationship, the more radical innovation is likely to occur in outsourcing.

Model 2 tests the relationship between contract types with an emphasis on joint-venture with profit sharing contracts and the client-supplier relationship (H3). The hypothesis was supported. Using a fixed-fee contract has a negative, but not significant effect on the client-supplier relationship ($\beta$=-.01, ns). Contracts that involve time and materials have a positive and significant effect on the client-supplier relationship ($\beta$=.13, p < .05). Joint-ventures contacts with profit sharing have the strongest positive and significant effect on the client-supplier relationship ($\beta$=.17, p < .01). The relative weight of each of the estimates lends support to the hypothesis; partnership based contracts have a positive effect on the client-supplier relationship, while those that incorporate time and materials have a smaller, but still positive and significant effect on the client-supplier relationship. Finally, using a fixed fee approach has a negative effect on the client-supplier relationship, meaning that they have the lowest level of client-supplier relationship in their arrangements.

In order to test hypothesis 4, we estimated model 6, which adds the effect of the client-supplier relationship to model 4 in order to test the mediation effect[2]. Having previously established that the degree to which a contract incorporates a fixed fee basis has an effect on both radical innovation and the client-supplier relationship, we add the strength of the relationship between client and supplier to the model to test for mediation. The strength of the client-supplier relationship has a positive and significant direct effect on radical innovation ($\beta$=.34, p < .01). The results indicate there is a partial mediation of the effect of the contract type through the strength of the client-supplier relationship. The effect of incorporating time and materials ($\beta$=.07, ns) loses its significance, but more importantly in terms of mediation, the effects of both on radical innovation are lessened by the addition of the strength of the client-supplier relationship. The effect of using a fixed-fee contract is not mediated by the addition of the strength of the client-supplier relationship ($\beta$=-.05, ns). There is no change in the effect or the significance of a fixed-fee contract on radical innovation when the strength of the client-supplier relationship is added to the model. The effect of incorporating a joint venture with profit sharing into the contract is also reduced by the addition of the strength of client-supplier relationship to the model, but it does retain its significant effect on radical innovation ($\beta$=.15, p < .01). Thus, the direct effects of having a time and materials contract or a joint-venture with profit sharing are partially mediated by the addition of the strength of the client-supplier relationship.[3]

**Table 1.** Means, Standard Deviations and Correlations

|  | Mean | Std. Dev. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|
| 1. Radical Innovation | 3.34 | 0.79 | | | | | | | |
| 2. Client-Supplier Relationship | 3.32 | 0.82 | .39** | | | | | | |
| 3. Time and materials | 0.42 | 0.49 | .13* | .156* | | | | | |
| 4. Fixed fee for specified service | 0.78 | 0.41 | -0.08 | -0.04 | -0.09 | | | | |
| 5. Joint venture with profit sharing | 0.21 | 0.41 | .21** | .21** | -0.05 | 0.01 | | | |
| 6. Outsource Business Processes | 0.74 | 0.44 | -0.05 | 0.00 | 0.05 | 0.03 | -0.01 | | |
| 7. Outsource IT Development | 0.80 | 0.40 | .13* | .31** | 0.06 | -0.07 | .16* | -.30** | |
| 8. Outsource IT Maintenance | 0.88 | 0.33 | 0.09 | -0.02 | 0.06 | -0.05 | 0.01 | 0.10 | -.19** |

Note: n= 248. *p< 0.05, ** p<0.01

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[2] Structural equation models (SEM) were also estimated in order to verify the results. See Appendix 1 for a depiction and estimates of the model.
[3] Sobel tests were conducted to assess the significance of the mediation tests. The tests for mediation showed that the strength of the client-supplier relationship significantly mediated the effect of the type of contract on radical innovation.

**Table 2.** Results of Linear Regression Analyses: Effects on Client-Supplier Relationship and Radical Innovation

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|---|---|---|---|---|---|---|
| | Client-Supplier Relationship | Client-Supplier Relationship | Radical Innovation | Radical Innovation | Radical Innovation | Radical Innovation |
| Outsource Business Processes | .09 | .08 | -.01 | -.02 | -0.04 | -.04 |
| Outsource IT Development | .35** | .31** | .15* | .10 | .02 | -.01 |
| Outsource IT Maintenance | .05 | .03 | .13* | .11+ | .11+ | .10 |
| Time and materials | | .13* | | .12+ | | .07 |
| Fixed fee for specified service | | -.01 | | -.05 | | -.05 |
| Joint venture with profit sharing | | .17** | | .21** | | .15** |
| Client-Supplier Relationship | | | | | .38** | .34** |
| Adjusted R2 | 0.1 | 0.13 | 0.02 | 0.07 | 0.14 | 0.16 |
| R | | 0.03 | | 0.05 | 0.12 | 0.14 |

Note: Standardized regression coefficients are reported

Telecommunications is the reference category for industry

*p< 0.05, ** p<0.01

## 5    Discussion

The results of this study highlight three key areas of interest within the literature on innovation in outsourcing of services. First, the results show that a joint-venture with profit sharing contract has a positive effect on radical innovation while fixed-price and time and materials contracts have no effect. Past studies found that fixed-price contracts deliver higher service quality [33] and are more suitable for long-term and large outsourcing projects [32]; however, client firms expecting suppliers to deliver radical innovation in outsourcing engagements will not benefit from a fixed-price contract. Radical innovations are typically associated with high degrees of uncertainty regarding the scope of work involved to deliver innovation and the possibility to design precise metrics to measure outcomes [16, 59], which will deter suppliers from using fixed-price contracts regardless of the strength of the client-supplier relationship or the degree to which the supplier is familiar with the client's business [31]. Clearly, because of the elevated risk of encountering opportunism in which a supplier is acting untruthfully to serve self-interests [60-61] within an outsourcing engagement for innovations, clients will stay away from using time and materials contracts. On the other hand, a partnership based contract, such as a joint-venture contract which is based on profit sharing, creates motivation for both parties to collaborate and contribute towards radical innovation. This explanation is in line with the assertion

[47, 62] that radical innovations are likely to be found in inter-organizational relationships and networks that provide access to resources and capabilities that cannot be found internally. For example, inter-organizational networks can facilitate the development of joint research capability required for radical innovation which is greater than the research capability that the client firm can develop on its own [63]. A joint research capability still may lead to a continuous bargaining process between the client and supplier about the appropriation of the value created [63-64], while a joint-venture contract may overcome this challenge by introducing transparency regarding profit sharing and by setting up clear expectations about profit sharing, which is usually based on the proportional contribution of each party.

Secondly, the strength of the client-supplier relationship has a positive effect on radical innovation. In line with observations made based on several case studies by Weeks and Feeny [10] and Quinn [7], our study models the link between client-supplier relationship and radical innovation to find that a strong relationship between client and supplier may lead to a shift from a transactional to a relational governance approach [50, 65]. The relationship between client and supplier facilitates the supplier's ability to learn about the client's business (Weeks and Feeny, 2006; Gefen et al, 2008), helping the supplier to offer radical solutions to ongoing challenges. This explanation is in line with the conclusion of the recent conceptual study that proposed that a greater degree of trust in the client-supplier relationship leads to client's ability to access the supplier's Intellectual Property (IP), and may result in incremental and radical innovation [66]. In this regard, our study responds to the call by Roy and Sivakumar [66] to test the connection between client-supplier relationship and radical innovation.

Third, we found that the client-supplier relationship mediates the effect of a joint-venture contract and radical innovation. Strong relationships between the client and supplier do not improve the effect that fixed-price and time and materials contracts have on radical innovation. These remain insignificant, hinting that a shift towards a relational governance approach cannot compensate for the risks involved in pursuing fixed-price or time and materials contracts for radical innovation in outsourcing engagements for the reasons explained above. The role of the client-supplier relationship in mediating between a joint-venture contract and radical innovation is, particularly, important as there are still risks in such partnerships that need to be mitigated. For example, there still might be a possibility that the client firm will be concerned with information leakage [47, 67] or the loss of Intellectual Property, in particular if there is a risk of the supplier applying knowledge generated in the joint venture in its engagements with other clients [66]. In such cases, a strong client-supplier relationship, which is based on trust, can help the client communicate their concerns without having to engage in a legal action. Having discussed the results of our analysis, we now consider the implications of this study to theory and practice.

## 6      Theoretical and Practical Implications

The study of innovation in the service industries is relatively new. While several studies examined radical innovation in new service development settings [e.g. 19, 20, 68], the focus of these studies was on the generation of radical innovation within the firm. Our study extends the literature on innovation in the service industries to include

the factors affecting radical innovation in client-supplier settings. In this regard, the central role that client-supplier relationship and contract types play in achieving radical innovation in outsourcing settings emphasizes the need to consider factors that are shaped by the firm and external partners, as innovation in the services can be, and often is, generated outside the firm. Chesbrough [69] has considered open innovation for the service industries, as firms are likely to compete on services when ideas are brought into the firm from external contributors. While we concur with the idea that innovation in the services can be generated through open source platforms, evidence on this phenomenon is mainly based on case studies, failing to substantiate the key factors affecting radical innovation in the service industries.

Results of our study also inform the IS field, in particular to innovation in the context of outsourcing services, which is one of the fastest growing service industries. To our knowledge, this is the first study that investigates radical innovation as a dependent variable in the context of outsourcing [13]. Further, this study is a timely response to Roy and Sivakumar's [66] call to examine the factors affecting radical innovation in outsourcing engagements. In this regard, our study extends past studies that examined the effect that various types of outsourcing contracts have had on outsourcing performance [e.g. 31, 33, 56] to reveal that only joint-venture contracts have positive effect on radical innovation in outsourcing. We also extend our understanding regarding the relationship between client-supplier relationship and outsourcing outcomes [48-50], specifically for the case of radical innovation as a dependent variable. In this regard, we confirm past observations that client-supplier relationships positively affect outsourcing outcomes, including radical innovation. Further, while research has argued that relational governance and contractual governance act as complements rather than substitutes [e.g. 41], our analysis suggests that such interactions between these two governance approaches are likely to happen in the case of radical innovation when joint venture contracts are in use and less likely to happen in the case of fixed-price and time and materials contracts.

There are some practical implications that surface from this study. As the outsourcing services industry is maturing, executives of client firms seek to extract innovations from their partners (Weeks and Feeny, 2008). Our study supports the observations made by Gopal and Koka (2008) and Gefen et al (2008) that certain contract types affect outsourcing performance. However, our analysis shows that relying on fixed-price and time and materials contracts will not support radical innovations as an outsourcing outcome. Executives will need to consider using joint-venture with profit sharing contracts in order to enable radical innovations. However, the academic literature and also this research suggest that the vast majority of client firms use fixed-price contracts. For example, our analysis shows that only 21% of our sample are accustomed to use joint-venture contracts while 78% of the firms in our sample use fixed-price contracts (see Table 1). For radical innovation to take place in outsourcing, client firms need to consider their strategic intent [70] regarding the expected outcomes.

Our analysis also shows that the client-supplier relationship is mediating the affect of the joint-venture contract on achieving radical innovation. Therefore we conclude that while the joint-venture contract maintains its importance in achieving radical

innovations, client firms should focus on developing client-supplier relationships as the driving force to achieve radical innovation.

The analysis presented in this paper is subject to several limitations. First, we have used three types of contracts which are not necessarily representing the complete range of contracts applied by firms in their outsourcing engagements. Future research should consider extending the range of contracts used in outsourcing engagements such as outcome-based contracts. Secondly, our sample is biased towards the European perception of radical innovation in outsourcing which can be affected by the relative immaturity level of the European outsourcing market as compared with the USA one. We see an opportunity to conduct a similar study in the context of the USA outsourcing industry to compare with the results of this study. Thirdly, DiRomualdo and Gurbaxani [25] found that clients need to match the type of ITO decision (business improvement, IS improvement, or commercialization) with the right kind of contract. Our study did not consider the strategic intent of the client firm as our intention was to test top executives' general perceptions regarding the link between outsourcing and radical innovation. Future research can refine our results by including the strategic intent as a variable affecting the type of contract selected for outsourcing. Last but not least, we have attempted to collect information from executives whose responsibility is to execute outsourcing projects and at the same time bring innovations into the firm. In reality, in many firms executives, such as CFOs and CIOs, will be responsible for executing outsourcing projects while not necessarily maintaining high degree of involvement in innovation. On the other hand, some executives, such as the Vice President (VP) of R&D or VP of engineering will be leading innovative work yet with a low degree of involvement in outsourcing projects. Future research on innovation in outsourcing should control for the function outsourced (e.g. IT, Finance and Accounting or R&D) and the role of the respondent to eliminate such shortcomings.

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## Appendix: Results from Structural Equation Modelling
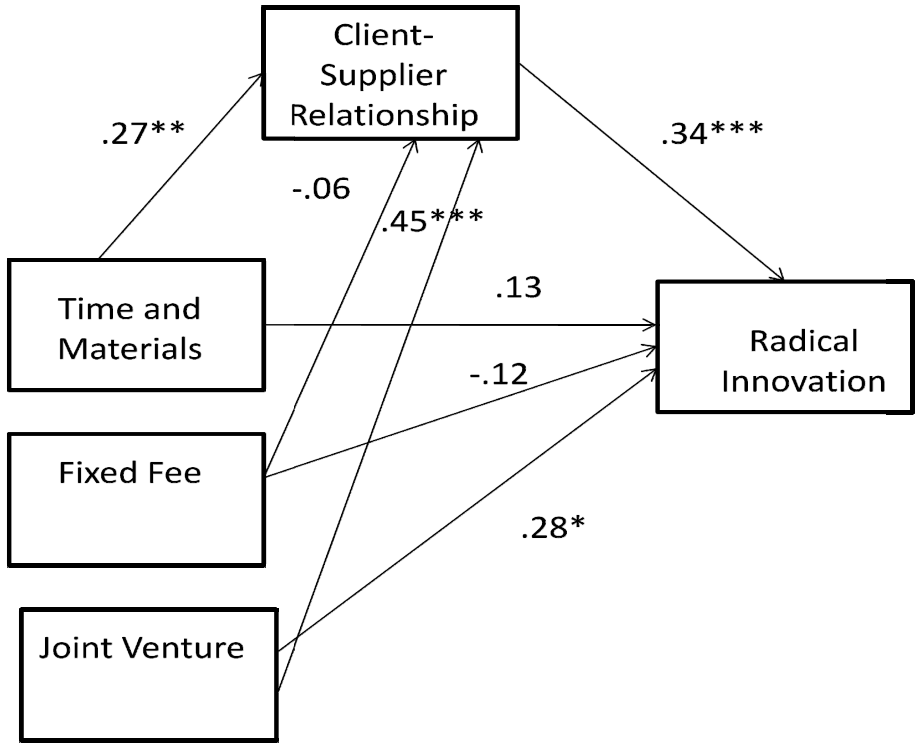
# Shifting Sand: Organizational Identity, Partnership and IT Outsourcing

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**Abstract.** This study pertains to the influence of organizational identity and organizational image on the quality of an information technology outsourcing relationship. Organizational identity is conceptualized as the mental representation that organizational members have of themselves as social group in terms of practices, norms, and values. We focus on two key organizational images that are defined from two perspectives: within and from the outside of the organization. From within, it refers to what members believe outsiders perceive the organization's identity; from the outside, it represents how outsiders actually appraise the organizational attributes (mirroring image or reputation). Using secondary data, in an outsourcing context, we conjecture that the degree of proximity between each partner's respective interpretation of organizational identity and the image the other party has of them influences the quality of the relationship, mainly in terms of trust, understanding, and conflict – or lack thereof.

**Keywords:** Outsourcing relationship, Organizational identity, Organizational image, Trust, Sensemaking.

## 1 Introduction

Research on IT Outsourcing has focused on two means of managing client-supplier relationships: the formal outsourcing contract and the post-contractual relationship management (psychological contract). While early research focused largely on the former, more recent studies emphasize the importance of implementing psychological contracts at different moments during the inter-organizational relationship (e.g. [1], [2]). These studies suggest that trust [3], cooperative learning [4], and cultural acceptance [5] are key factors for successful outsourcing relationships. Thus, management of outsourcing relationships needs to foster effective cross-boundaries collaboration and knowledge sharing among individuals from both contractual entities [6]. Yet, achieving such collaboration is likely to be challenging since the actors involved abide by different organizational contexts characterized by idiosyncratic

norms, values, and practices. Organizational contexts can be defined by the concept of organizational identity [7]. Briefly, *organizational identity* represents the ensemble of perceptions shared by organization members about whom they are as an organization [8]. Organizational identity offers the means with which members assign meanings to their daily practices and it is influenced by their beliefs "which are grounded in and interpreted using cultural assumptions and values" [9: p.25]. Closely related to the concept of organizational identity is the notion of *organizational image* that has been defined from different perspectives: from within the organization, as the way organizational members believe others see their organization - *construed external image* [10], [8] or the image that top management would like outsiders to see the organization - *desired image* [11], [12]; or from the outside of the organization, as the result of the external stakeholders appraisals – *reputation* or *mirroring*  [13], [14]. The *construed external image* is considered important by the organizational members, as it represents their "best guesses at what characteristics others are likely to ascribe to them because of their organizational affiliation" [15: p.548]. Identity formulation represents a "sensemaking" process that allows organizational members to overlay new events on top of past experiences, and to meaningfully interpret and incorporate new information into a frame of explanatory reference [16] that might be useful for purposes of enhancing future predictability, such as what to expect from a daily collaboration with outsourcing partners.

Although IS researchers stress the importance of building a successful relationship in IT outsourcing activities [17] how organizational identity may affect outsourcing relationships has yet to be studied. In this research-in-progress paper, we aim to understand the challenges encountered by organizational members involved in knowledge sharing as part of an IT outsourcing relationship. To do this, we draw on the concepts of organizational identity [8] and organizational image [12] and on the "sensemaking" perspective [16] to provide the theoretical foundation for a longitudinal field study of a Canadian healthcare centre in which the upper management engaged in a public-private partnership and outsourcing agreement with CNS (a pseudonym), a world leader in IT sourcing solutions. At the time of the writing, the outsourcing project was in the planning phase.

Our partial empirical findings (based on the fact that at this moment the outsourcing project implementation is in the planning phase) will be presented at the workshop.

## 2      Trust in Outsourcing Relationships

In order to achieve the expectations and accomplishments of an outsourcing relationship, the organization must *trust* the outsourcing vendor [18]. In this context trust may increase the predictability of mutual behavior through each party sticking to their commitments and allowing partners to deal with unforeseen contingencies in mutually acceptable ways [19]. Trust is a difficult concept to study as it has been defined and classified in many ways. Most definitions of trust focus on exposing oneself to vulnerability. Trust entails positive expectations regarding the other in a risky situation [20], and includes adopting a belief, without having full information to confirm

that belief [21]. In the context of outsourcing, trust has been defined as "the belief that a party's word is reliable and that it will fulfill its obligation as stipulated in the agreement, by acting predictably and fairly" [22: p.331]. Trust represents an aspect of a relationship between contractual parties, in which the parties are willing to accept risk for commitments that will (hopefully) result in a positive desired outcome [23].

Several researchers have focused on the role of trust in outsourcing relationships (e.g., [24], [23]). In this context trust is the result of cognitive processes, decision-making concerning economics, and social relationships [25]. Expectation is an important part of trust definitions [26], since trust can be seen in terms of, for example, reliable promises including both positive expectations and risk avoidance. Trust is essential to the strengthening of the relationship between partners, making the relationship more durable in the face of possible conflicts and encouraging interactions between partners involving knowledge sharing and promotion of each other's interests [22]. Trust is a "zipper to bind the client and service provider organizations [25: p.89].

Trust develops over time through efficient communication mechanisms between the participants [24] and cultural compatibility [23]. Formal communication such as daily interactions to discuss each party's contractual obligations and weekly/monthly meetings to oversee the whole outsourcing undertaking and informal communication at the personal level leads to greater trust [27]. Kern and Willcocks [22] suggest that the client and the provider might need to engage in cultural adjustments in terms of attitudes, norms, and corporate strategies in order to achieve trust.

Sabherwal [23] posits that culture is an important element in the inter-organizational relationships during an outsourcing contract. An organization's culture is composed of values, behaviors, and attitudes [12]. It provides continuity, structure, common meaning, and order, giving rise to stable patterns of interaction within the organization. In many cases of IT outsourcing, the vendor staff resides in the client company, as it happens that the sends some of its staff to the vendor company. With the development of vast amounts of networks and relationships between the client and vendor companies in a highly tense environment with time constraints, there are inevitably problems associated within the relationship and trust-building process. Kern and Willcocks [22] state that if the cultural and communications fit is wrong or if support strategies differ, relationships would suffer, giving occasions for misunderstandings and possible conflicts. Cultural compatibility is deemed a vital component in selecting the correct partner, that is, the client-vendor must have the same objectives and be heading in the same direction; for example, both parties should be able to agree that the task can be precisely specified, that the means of achieving the outcome and performance can be accurately evaluated, and that there are satisfactory means of resolving conflicts.

At the group level, trust is a collective phenomenon based on shared organizational values and norms [28]. Individuals' judgments about others' trustworthiness are anchored, at least in part, on their priory experiences about the others' behavior [29]. As organizational values are believed to guide behavior, sharing a common organizational culture helps team members to predict each other's behavior in the future. Shared beliefs and understandings about relatively permanent features of an organization

reduce uncertainty, but also determine which types of behaviors, situations or people are desirable or undesirable [30]. Therefore, organizational culture can be seen as a foundation for "sensemaking" actions carried out by members as "they interrogate themselves on central and distinctive features of their organization" [31: p.434]. These actions are defined as *organizational identity* claims that reflect how members make sense of what they do - as defined by cultural norms, values, and symbols - in relation to their understanding of what their organization is [32].

## 3      Dynamics of Organizational Identity, Image and Culture

Most of the literature on organizational identity develops the idea that identity is a dynamic construct formed in interaction with organizational image [15], [8] and organizational culture [12], [31]. *Organizational identity* constitutes mental representations of how organizational members define themselves as social group in terms of practices, norms, and values and understand themselves to be different from members of other organizations. At the individual level, it reflects the shared understanding of what the organizational norms, values and practices are [33]. At the organizational level, identity has been defined either as an organizational asset, something that is durable or as a dynamic process, something that is continuously in a "becoming" phase formed by the amalgamation of the distinctive attributes of individuals [7]. Through continuous interaction, organizational members reconstruct their organizational identity through interpretive schemes in order to provide meaning to their experiences and practices as part of their membership to a specific organization [10]. Therefore, organizational identity is a collectively held frame within which organizational participants make sense of their world [34]. Similar to legitimacy, organizational identity has a reality independent of individual organization members although it is subjectively arrived at. The more an individual conceives of the self in terms of the membership of an organization, the more the individual's attitudes and behavior are governed by this organization membership [35]. We underline the *central*, *distinctive* and *dynamic* nature of organizational identity. The central aspect of identity is based on the core set of beliefs, values and norms rooted in the organizational mission that eventually justifies members' understandings of who they are. The distinctive character is reflected by members' perceptions of the differences between their organization and others, usually competitors. The dynamic nature of the organizational identity is reflected by its recurrent link with organizational culture and image.

A number of scholars recognize the need to make a distinction between the organizational culture and identity (e.g., [32], [12]). Organizational culture provides a symbolic context within which perceptions of organizational identity are formed [12], [36], thus identity is part of the belief system (culture) by which organizational members make sense of their actions. Dutton and Dukerich [15] suggest that, "an organization's identity is closely tied to its culture because identity provides a set of skills and a way of using and evaluating those skills that produce characteristic ways

of doing things" (p.546). Thus, identities represent the behavioral expressions of the aspects of organizational culture interpreted into a specific context [32].

Organizational boundaries are becoming increasingly more permeable to influences external to the organization, and are consequently becoming less clear [37], [12]. As organizations become increasingly exposed to the interests of external stakeholders, and as organizational boundaries become increasingly more penetrable, the way in which outsiders view the organization becomes more critical, as outsiders begin to play a greater role in the formulation of an organization's image [12]. Dutton and Dukerich [15] have characterized organizational image as that which an organization's members believe *others* see as distinctive about their own organization, and have argued that identity and image are cognitive constructs that interact dynamically to "actively screen and interpret issues" (p. 550). However, organizational image can be defined from two perspectives: within or from the outside of the organization. From within, image refers to what members believe outsiders perceive the organization's identity (*construed external image*). This image is based on the perceived organizational identity which acts as a mirror, "reflecting back to the members how the organization and the behavior of its members are likely being seen by outsiders" [10: p.249] and tying in to the concept of organizational reputation or mirroring; from the outside, it represents the beliefs outsiders (clients, partners, etc.) actually have about organizational attributes (*mirroring* or *reputation*) [13].

Hatch and Schultz [12] propose that organizational identity is essentially a product of dynamic and reciprocal interactions between an organization's identity, its culture and its image (external to organization). Their conceptual model suggest that identity interacts with images that are held by organizational outsiders recursively: identity "mirrors" the images that outsiders have of the organization back to the organization's identity ("mirroring"), while organizational identity constitutes a "sensegiving" expression of the organization's identity to external stakeholders ("impressing"). Hatch and Schultz [12] provides a dynamic definition of organization identity, in which an organization's identity is constructed throughout the course of continuous social exchanges, and by means of internal and external definitions of the organization self.

## 4    Outsourcing Relationships and Organizational Identity "Sensemaking"

An organization's identity could be regarded of as a set of "negotiated cognitive images" that emerge out of "complex, dynamic, and reciprocal interactions" [13: p.43] among people who are both internal and external to the organization. Issues of organizational identity change arise not only as an organization attempts to answer the question "Who are we?" but also the question of "Who do others think we are?" which means that identity is closely interrelated with *construed external image* and *reputation*. Arising from this comparison is either a sense of discrepancy ("how we see ourselves does not match with how we think others see us") or a sense of alignment ("we see ourselves in a similar way to how we think they see us") [38].

Regardless of whether a sense of alignment or discrepancy arises, identity is reconsidered and reconstructed through processes of *sensemaking* [16] as organization members confront the knowledge and implications of others' views of the organization (the actual external image or reputation) during the outsourcing process. In our study we are interested on how members of both organizations involved in an outsourcing contract make sense of their organization identity and their construed external image and how these cognitive activities affect their trust in their outsourcing partner.

Sensemaking is defined as the development of ongoing retrospective meanings of what individuals are doing in an organizational context [34]. Although sensemaking is an ongoing process, the need to make sense is intensified in circumstances where organizational members face situations where there is no predetermined way to act, and where a high degree of ambiguity is experienced [16]. Relevant to this study, an IT outsourcing contract may change organizational members' current work practices. This type of situation might cause what a 'shock' that triggers an intensified period of sensemaking [34], which informs action.

Organizational identity construction and the use of plausibility are the two basic properties of sensemaking [39].    Weick et al. [16] suggest that "stakes in sensemaking are high when issues of identity are involved" because "who we think we are (identity) as organizational actors, shapes what we enact and how we interpret" (p.416). Therefore, how organizational members will make sense of their identity will affect how they will think outsiders think of themselves (construed external image). Sensemaking is more about plausible interpretations and expectancies, than about truth, accuracy or getting right [40]. In the context of outsourcing, individuals will use their interpretations of organizational identity as a guidepost for measuring the importance of the changes in their work practices that outsourcing might bring. They will also make sense of what to expect from their partners (trust) based and their interpretation of the others' organizational identity. Thus, we conjecture that the degree of proximity between each partner's respective interpretation of organizational identity and the image the other party has of them influences the quality of the relationship, mainly in terms of trust, understanding and conflict – or lack thereof. We use the two extreme situations for illustrative purposes:

> **Proposition 1:** If the client' identity is very close to: (1) the *mirroring* image the supplier has of the client and (2) the *construed external image* the client believes others have of its organization, one would expect few misunderstandings, few conflicts and a high degree of trust between the partners.
> **Proposition 2:** If the client's identity significantly differs from: (1) the *mirroring* image the supplier has of the client and (2) the *construed external image* the client believes others have of its organization, one would expect misunderstandings or conflicts (because of the difference the client's identity and the mirroring image the supplier has of the client) and mistrust (because of the difference between the client's identity and the construed external image).

This study adopts Scott and Lane's [13] approach to identity in which organizational identity is considered as a set of "negotiated cognitive images" that emerge out of "complex, dynamic, and reciprocal interactions" (p.43) among people that who are

both internal and external to the organization. While the main purpose of our conjectures is to examine the quality of the outsourcing relationship, we would also like to shed light on an interesting question of whether organizational identity is "enduring" in a dynamic context such as outsourcing in which individuals engage in practices governed by two different organizational identities.

Researchers in organizational identity have argued that because identity involves answers to fundamental questions such as "Who are we?", "Who should we be?" and "Who do others think we are?, it is inherently stable and resistant to change [41]. However, others have demonstrated that quite to the contrary, organizational identity can change over relatively short periods of time [42]. The underlying means by which identity change is possible while appearing to have endurance or continuity is that organization members maintain consistent labels for elements of their identity over time, but the meanings associated with these labels change to accommodate current needs [38]. Moreover, Gioia et al. [8] suggest that identity should be viewed as a "potentially precarious and unstable notion, frequently up for redefinition and revision by organization members" (p.64), a perspective rooted in the authors' position that identity is influenced in part by feedback by others outside to the organization. In the same perspective, Scott and Lane [43] argue that organizational identity is neither static nor fluid but "sticky", due to the tendencies of an organization toward the preservation of identity (resistance to change) and to cognitive biases.

Clearly, the fluidity and complexity that are the facets of the modern economy have greatly increased the challenges faced by organizations as they search for a clear self-definition. For instance, what happens to an organization's identity when the organization decides to downsize, acquire a new subsidiary, or outsource a part of or an entire function such as the IT function? Based on the above argumentation, it could easily be argued that the organization's identity – what is the essence of the organization – has changed. But then, how an unstable identity of an organization that engages in an outsourcing process will affect the creation of trust, the necessary factor for a successful partnership relation?

## 5      Methodology

Given the exploratory nature of our research question and the still limited evidence available on the topic that we intend to disclose, we decided to follow a case study approach [44]. The setting is a major Canadian public healthcare centre in which the upper management engaged in an outsourcing agreement with an IT outsourcing provider (CNS). We use an interpretive research approach, which gives voice in the interpretation of events to the people actually experiencing those events, so the insiders' point of view becomes the foundation of the analysis [45]. The stakeholders of the IT outsourcing relationship will constitute our main source of data. We will use three sources of data: interviews, archives, and participant observation. We will conduct semi-structured interviews with the main stakeholders involved in the IT outsourcing relationship. Specifically, we will assess how members of the two organizations implicitly and explicitly evaluate how they see the organization (i.e., provide answers to such questions as "Who do we think we are?" and "Who do we

think we should be?") in relation to how they think outsiders (in this case CNS) see it (i.e., provide answers to questions such as "Who do they think we are?" and "Who do they think we should be?").

Participant observation will be perhaps the most important aspect of our data-gathering strategy, especially for tracking the inter-organizational dynamics of partnership (e.g., by participating to the joint steering committee overseeing the outsourcing venture) and for providing a means of bridging inconsistencies among informants' views [46]. The participant observer will use a formal research diary to record meeting notes and observations.

We will complement the individual data from the interviews with archival data such as project-related documentation (e.g. minutes of meetings, progress reports, technical documentation pertaining to the outsourcing process, and e-mails) that will fill potential gaps in the interviewees' memory.

Due to the fact that at the time of the writing of this report (beginning of January 2012), the access to the setting was in the early stages (identification of the participants, getting access to archival data), we decided, for illustrative purposes, to verify our conceptual framework with secondary data. To this end, we used a doctoral dissertation that reports stories told by employees of a software firm that outsourced the vast majority of its IS operations [47].

### Software Corp. and Partner Inc. [47]

*Context*: With about 3000 employees in 1991, Software Corp. was developing and providing maintenance of information systems (hardware and software) for the travel industry. The company targeted small business often neglected by bigger systems providers. In 1986 Second Inc. acquired Software Corp. and made it an independent subsidiary. From 1987 to early 1990's Software Corp. went through a period of aggressive growth and built some important strategic foreign alliances. However, in 1991, due to adverse economic conditions, Second Inc. and Software Corp. were forced to ask for government bankruptcy protection. Following major budget cuts and restructuration, Software Corp. decided to outsource a major part of its operations to Partner Inc. Along with 2,000 employees the development and mainframe operations were transferred to the outsourcing partner. Software Inc. retained internally only the design, development, sales and support of PC products.

*Data*: Dubé [47] extracted stories from interviews with respondents from Software Corp. and Partner Inc. Eighty-nine stories were compiled from the transcripts that included specific events narrated by organizational members. To illustrate our conjectures we chose five stories.

Several stories from the employees of Software Corp. portray Partner Inc. as a representative of "cold corporate America" despite the fact that this company basically bailed out of bankruptcy Software Corp. For example, in Story #28, an analyst with Software Corp. describes Partner Inc. as playing the role of the "bad" guy.

*"To tell the truth, I wanted to go there. But I'm glad I didn't. Because of the philosophy they had, the management style, the restrictions they impose on their people. I think it's like an old philosophy, they are very strict. I don't think they treat them like professionals".*

Another theme that emerges from the stories is that Partner Inc.'s employees lack the understanding of Software's business environment. Story #17 shows how this situation caused conflicts that resulted in more work for Software Corp.'s employees.

*"I was told that Partner Inc. told them (a hotel company) that they had to move a telephone line and they wanted to cut the line over during the middle of the afternoon, which shuts down my operations to that person. It is not smart from a customer service point of view. So, there are issues that they don't always think of the implications to us before they are doing something. This happens to be major. We are talking about big money".*

There is also a common understanding among Software Corp.'s employees that working with Partner Inc. has increased the formalization, which engendered delays in getting the work done ("red tape"). For instance:

*It's totally two different companies, so we really can't tell them what to do. So, everything else is just schedule. Right now, we're having a meeting next week. I've been told we needed a meeting to get some things organized, that if a person is down, especially a contractor, I can't wait all day for Partner Inc. to come by in the afternoon. The contractor is getting paid $50 or $60 an hour to sit there. That's not right. So, I'm getting a meeting put together for next week".*

Another emerging theme is that Partner Inc. took for granted Software Corp.'s employees and made unfulfilled promises:

*"They promised, like, the benefits were going to be so great and all that stuff. And actually, the benefits are not as good as Software Corp. benefits. [...] 401(k) plan, Software Corp. You know, that's like a retirement plan. Software Corp. will give you twenty-five cents on every dollar up to six per cent of your wages, so it's an instant 25 percent profit, the second you put it in the account. Partner Inc. doesn't do that, you know. Their insurance package, I think is a little more expensive. So they made these huge promises to us and basically they lied. I think they are a bunch of weasels if you ask me".*

In Story #19, a manager working for Partner Inc. clearly delineates the differences in rules and regulations between the two organizations that were applied to the same type of tasks. His perception is that there are two organizations with two different cultures that need to reconcile these differences in order to provide the expected level of service.

> *"They have different rules and regulations in Partner Inc. that no longer apply to Software Corp. There was some change. You may do the same job on a day to day basis but eventually since there is a new management structure they look at things in a different light and they may treat the job or they may change people from doing things one way to another … contractually all they have to do is to provide the same level of service that they were providing for Software Corp".*

The above stories portray a strained and problematic outsourcing relationship between Software Corp. and Partner Inc. From an organizational identity perspective, we can argue that the differences between the client's (Software Corp.) identity and the *mirroring* image the supplier has of the client (Stories #17, 19, 27 and 28) have created tensions and conflicts among the members of the two organizations. Also the differences between the client's (Software Corp.) identity and the *construed external image* Software Corp. believed Partner Inc. has of its organization (Story #23) prevented building an appropriate environment for trust.

While rich in insights about the nature of the relationship between the two parties involved in the IT outsourcing contract, Dubé's [47] stories provided support for Proposition 2 only. However, this exercise gave us  evidence that our organizational identity-based conceptual framework is applicable in the context of outsourcing and that using it to examine the nature of a partnership may allow us to shed new light on a complex phenomenon.

## 6      Expected Contribution

This study will contribute to the IS literature on outsourcing by providing an in-depth examination of how the building trust in IT outsourcing relationship is related to each party's understanding of organizational identity; and proposing a sensemaking perspective-based framework for understanding individuals' mental construction of organizational identity and image affect inter-organizational collaboration effectiveness, especially in the context of outsourcing. We expect that the results of our study will also have implications for practice helping those in charge of managing outsourcing relationships better understand some of the causes of mistrust and even conflict that often arise over the duration of an outsourcing contract. We suggest that a clarification of each partner's identity for the other party might contribute to increased trust.

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# Learning Software-Maintenance Tasks in the Transition Phase of Offshore Outsourcing Projects: Two Learning-Theoretical Perspectives

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**Abstract.** The increasing practice of offshore outsourcing software maintenance has posed the challenge of effectively transferring knowledge to individual software engineers of the vendor. In this theoretical paper, we discuss the implications of two learning theories, the model of work-based learning (MWBL) and cognitive load theory (CLT), for knowledge transfer during the transition phase. Taken together, the theories suggest that learning mechanisms need to be aligned with the type of knowledge (tacit versus explicit), task characteristics (complexity and recurrence), and the recipients' expertise. The MWBL proposes that learning mechanisms need to include conceptual and practical activities based on the relative importance of explicit and tacit knowledge. CLT explains how effective portfolios of learning mechanisms change over time. While job-shadowing, completion tasks, and supportive information may prevail at the outset of transition, they may be replaced by the work on conventional tasks towards the end of transition.

**Keywords:** Software Maintenance, Learning, Offshore Outsourcing, Transition Phase, Cognitive Load Theory, Work-Based Learning.

## 1 Introduction

Most of the costs associated with corporate software applications occur during software maintenance [1]. Maintenance tasks such as correcting faults and building enhancements are knowledge-intensive. They frequently require not only general technical knowledge, but also knowledge specific to the particular maintenance task, such as knowledge about the software application, the application domain, the software development process and the organization [2, 3]. This knowledge, which is crucial to the success of software work [4], may be acquired by individual software engineers over years of experiential learning [5].

However, what happens if such knowledgeable software engineers need to be replaced within a short time frame? How can their knowledge, which may have been acquired over years, be transferred to the software engineers that take over their work? This is one of the key questions in offshore outsourcing software maintenance tasks. In offshore outsourcing, the knowledge of the prior task carriers, such as former in-house employees or staff from another vendor, needs to be transferred to software

engineers of an offshore vendor within a short time frame, called the transition period [6]. Typically, the transition takes place onshore at the client site. However, given that frequently vast amounts of knowledge need to be transferred during a transition, the transition time is often underestimated, leading to significant extra costs for both client and vendor [7]. This raises the question of how the knowledge transfer during transition can be made more efficient and effective.

The existing literature has begun to view knowledge transfer in offshore outsourcing from a learning perspective. A set of key learning mechanisms in offshore projects have been identified, such as knowledge repositories, formal presentations, on-the-job training, task simulation and story-telling [8-12]. In a case study of a large-scale transition project, Chua and Pan [9] reported three further remarkable findings. First, some areas of knowledge were not assimilated before the comprehension of other related areas. In other words, certain types of knowledge and their associated learning mechanisms appear to build on each other. This indicates that the sequential combination of learning activities may play a key role for effective learning. However, in the current literature little is known on how to combine such learning mechanisms over time. Second, the effectiveness of particular learning mechanisms differed depending on the type of knowledge that was to be transferred. This suggests that learning mechanisms need to be aligned to the type of knowledge to be transferred. However, the existing literature provides limited evidence of how knowledge characteristics impact the selection of learning mechanisms. Third, learning effectiveness was constrained by the sheer load of information during transition [9].

Drawing on the findings by Chua and Pan, this research seeks to contribute to answering the following research question:

> *How can learning mechanisms be effectively combined during the transition phase in offshore outsourced software maintenance?*

To this end, we introduce two learning theories to information systems (IS) outsourcing research: the model of work-based learning (MWBL) [13] and cognitive load theory (CLT) [14, 15]. After clarifying the boundaries of this research, we will outline the theories and discuss their implications for combining learning mechanisms during the IS offshore outsourcing transition. Next, we will report an illustrative case and discuss the explanatory power of the two theories based on this case. Implications for further research and practice will follow.

## 2     Theory Overview

The goal of knowledge transfer in the transition phase of offshore projects is that vendor engineers (in the following: learners) are able to carry out maintenance tasks at the end of transition. Prior to transition, the maintenance tasks have typically been carried out by one or more other engineers. These engineers can be understood as knowledge sources whose knowledge needs to be transferred to the learner. In maintenance transitions, learners need to acquire the relatively comprehensive existing knowledge of knowledge sources until they reach a performance level sufficient to take over the task.

The question arises through which combination of mechanisms software engineers can acquire this comprehensive knowledge most effectively.

In this paper, we present two learning theories which contribute to answering these questions: the MWBL and CLT. Both theories make sense of the vast range of theoretically possible learning activities by grouping them into learning mechanisms[1]. This distinguishes them from other theories which focus exclusively on one or few learning mechanisms. The wide range of mechanisms reported in the existing literature on IS offshore outsourcing warrants the use of these rather broad theories.

While both theories aim at explaining the situational fit of learning mechanisms, they differ in the situational factors that influence this fit. The MWBL focuses on the fit between the type of knowledge to be transferred, specifically the explicit-versus-tacit dimension of the knowledge components, and corresponding learning mechanisms. In contrast, CLT emphasizes the fit between task characteristics, specifically the complexity and recurrence of the underlying task, the learner's expertise, and respective learning mechanisms. Thereby, it suggests that the overall task comprises a set of particular tasks reflecting a whole-part relationship. Given that maintenance tasks may require various knowledge components and may comprise various particular tasks, both theories explain how a portfolio of mechanisms is chosen that fits the situational factors of one particular maintenance task. In contrast to the MWBL, CLT also explains the sequencing of portfolios over time. Figure 1 shows an overview of the two theories. By presenting both theories in this paper, we illuminate which aspects in the definition of learning mechanism portfolios can be explained by each.
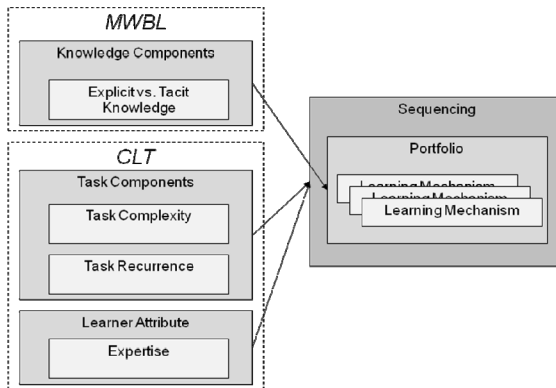


**Fig. 1.** Situational Factors in the MWBL and CLT

Most of the situational factors suggested by the theories have been found influential in existing research on IS offshore outsourcing. Explicit knowledge was found to be transferred through different mechanisms than tacit knowledge [9, 10, 12]. Task complexity, which we define as the number of interrelated elements to be considered

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[1] The MWBL uses the term "learning types", while CLT speaks of "learning components". In this paper, we use the term *learning mechanisms* to describe types of activities through which individuals learn.

during task execution [2], was found to complicate knowledge transfer in offshore outsourcing by imposing high load on the learner [9][2]. Finally, absorptive capacity [16], the ability to assimilate and apply outside information, was found to significantly constrain knowledge acquisition in offshore projects. We see absorptive capacity as strongly related the notion of expertise in cognitive psychology given that both constructs denote the ability to relate novel information to prior experience [7, 9].

The theories differ not only in their underlying situational factors, but also in the typology of learning mechanisms. In the next chapter, we begin by outlining the typologies used in both theories. We then depict the main propositions of the theories and discuss how they relate to existing literature on knowledge transfer in offshore outsourcing.

## 3    The Model of Work-Based Learning

### 3.1    Theory

Learning literature deals with a vast variety of learning mechanisms. The MWBL [13] is an attempt to classify and explain the effect of learning mechanisms used in a workplace context. Raelin's model of individual work-based learning goes back to experiential learning theory as established by Kolb [17]. Kolb delineated learning as individual knowledge acquisition through four types of activities: abstract conceptualization, active experimentation, concrete experience and reflective observation.

Raelin arranged these activity types in a two-by-two matrix using the dimensions modes of learning and knowledge type. Modes of learning refer either to practice, the process by which individuals acquire and practice artistry, or to theory, which helps to acquire concepts detached from the context of practice. Types of knowledge can be either explicit or tacit. Whereas explicit knowledge can be expressed in a codified form, tacit knowledge is deeply rooted in a person's actions [18]. Table 1 shows the resulting model.

**Table 1.** Learning Activity Types in Work-Based Learning (1997)

|  |  | Knowledge Type | |
|---|---|---|---|
|  |  | *Explicit* | *Tacit* |
| *Mode of Learning* | *Theory* | Conceptualization | Experimentation |
|  | *Practice* | Reflection | Experience |

In *conceptualization* activities, learners are presented or develop theoretical concepts. These concepts may help them to make sense of reality and challenge assumptions which underlie their practice. Learning by conceptualization results in explicit forms of knowledge. Through *experimentation*, learners align espoused theories,

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[2] Chua and Pan use the notion of systemic knowledge to describe situations in which a high number of dependencies need to be considered during task execution. CLT uses the term element interactivity. We see these notions as largely equivalent to task complexity and use this term in the paper.

which they hold prior to experimentation, and theory-in-use, which they develop during experimentation. Thereby, they further develop explicit, conceptual knowledge into tacit, actionable knowledge. *Experience* is what cognitive psychologists refer to as implicit learning, i.e. learners are not aware of their learning while performing a task. Experiential learning results in the acquisition or enrichment of tacit knowledge which is strongly bound to the context of the task. Learners who have only been involved into theoretical learning activities are confronted with idiosyncrasies when they enter practice. Through experience, they unconsciously acquire tacit knowledge which helps them to cope with the idiosyncrasies of their context. By *reflection*, learners develop explicit understandings of their acts or observations made in practice. Learning through observation is therefore a prominent form of learning through reflection [13].

While the model itself helps to classify and explain the effect of learning mechanisms, Raelin also provides recommendations for the combination of learning mechanisms by claiming that "all four should be used to engender the most learning in the shortest amount of time. Hence, effectiveness of work-based learning results from the comprehensiveness of facets to which the learner is exposed. It is not sufficient to learn only through theoretical exposition nor is it sufficient to engage in tacit practices without making one's mental models accessible" [13, p. 565]. There is theoretical support for this claim in cognitive psychology. Conceptualization helps to build schemas such as mental models [19]. These schemas increase the effectiveness of later experimentation or experience as they enable the learner to build chunks of information and thereby reduce cognitive load [14]. Elaboration such as through experimentation or experience increases the likelihood that information is retrieved from memory by the learners later when they need to apply the knowledge [20]. Furthermore, real-world tasks often require both explicit and tacit knowledge, which calls for including conceptualization and reflection as well as experimentation and experience. In addition, there is compelling evidence of the importance of the context of learning situations for learning effectiveness. Learners retrieve knowledge more easily when the contexts during encoding and retrieval are similar [21]. The activities related to the practice mode of learning, reflection and experience, are therefore effective to situate learning in the context of the future task of the learner.

## 3.2    Implications for Learning During the Transition Phase in Offshore Projects

To apply the MWBL to learning in offshore projects, we conducted a literature review of learning mechanisms used in offshore projects. Next, we assigned these mechanisms to the learning activity types in Raelin's model. Table 2 shows the results.

Documentation and face-to-face presentations support knowledge recipients to acquire explicit knowledge on concepts. Hence, they are conceptualization activities. Playback and task simulation are classified as experimentation activities as they allow knowledge recipients to align espoused theories and theories-in-use without entering

the context of the task they have to fulfill after transition. Job-shadowing and story-telling are examples of reflection activities because learners use observations from practice in the actual task context to refine or build explicit understandings. Finally, learning by doing and practice under guidance of mentors refer to experience as learners act in the context of their task.

**Table 2.** Learning Activity Types and Knowledge Transfer Mechanisms in IS Offshore Outsourcing Literature

| Learning Mechanism | Learning Mechanism in Offshore Outsourcing | Sources |
|---|---|---|
| Conceptualization | Documentation | [9, 10] |
| | Face-to-face presentations | [6, 9, 22, 23] |
| Experimentation | Role-Plays, case studies | [22] |
| | Written tests, quizzes, task simulation | [9, 22] |
| | Playback (offshore team presents understanding of a topic) | [9] |
| Experience | Practice under guidance of mentors | [24] |
| | Learning by doing | [9, 22] |
| Reflection | Job-shadowing (learner observes expert) | [10, 22, 23] |
| | Group discussion, performance feedback | [22] |
| | Story-telling | [11] |

The MWBL has implications for the *combination of these learning mechanisms*. Building on the claim that effective learning includes all four types, software engineers effectively learn through a comprehensive combination of mechanisms. They need face-to-face presentations or documents to build up conceptual understandings such as the application domain, the software architecture, the dataflow or the organizational structure. Participating in role-plays, case studies, quizzes, task simulation or playback helps engineers to refine their understanding of theoretical concepts and acquire actionable knowledge. Working on real tasks with or without support by experts is effective to situate knowledge in the context and enhance tacit knowledge components. Job-Shadowing, discussions, feedback or story-telling enable engineers to acquire explicit knowledge which is situated in the context of practice. Given this discussion, the model would predict ineffective learning in transitions which rely exclusively on presentations and document study or which rely exclusively on learning through the work on actual maintenance tasks.

The model also provides implications on how *characteristics of knowledge* influence the effective combination of learning mechanisms. Maintenance tasks which require the software engineer to mostly draw on tacit knowledge and comparatively less explicit knowledge should best be learned through a portfolio rich in experimentation and experience activities. This is particularly the case for problem-solving maintenance tasks that require a diverse set of sophisticated problem-solving heuristics to address a variety of software modification requests. By contrast, maintenance tasks that are well documented with rather little variation in problem-solving

knowledge may rely mostly on explicit knowledge that can be learned through face-to-face presentations, documentation and feedback.

# 4    Cognitive Load Theory

## 4.1    Cognitive Load Theory

Cognitive Load Theory (CLT) offers alternative explanations for the combination of learning activities. CLT uses the concept of cognitive load on the learner to explain learning. The theory claims that effective learning requires strategies that keep the cognitive load on the learner at a manageable level. Different learning mechanisms reflect different strategies to reduce load and are therefore chosen based on load considerations. As learning unfolds, learners perceive less load in the same activities, requiring the combination of potentially different learning mechanisms over time. The choice of learning mechanism to reduce cognitive load is based on the complexity and the recurrence of the task that is to be learned and on the expertise of the learner.

Since the initial work on CLT in the 1980s, the theory has been tested and extended considerably [15]. It is currently one of the most influential theories in cognitive psychology [25, 26]. Its theoretical propositions have been translated into implications for learning design in the Four-Components Instructional Design Model [27]. Given that the model is fully consistent with CLT [15], we see the model and CLT as a joint theoretical base to which we refer in this paper as CLT for reasons of simplicity.

CLT assumes limited working memory capacity concerning novel information. Working memory is able to store five to nine information elements at the same time, but to operate only on two to four [15]. While the absorption of novel information is therefore significantly constrained, there are no known limitations concerning the retrieval of information stored in long-term memory. Yet, long-term memory significantly impacts how novel information is processed by working memory. Experts hold powerful schemas which enable them to aggregate information to large chunks. In contrast, novices hold no or poor schemas for information aggregation [28]. Cognitive load is determined by the number of chunks to be processed at the same time. Hence, novices are at larger risk of facing cognitive overload as compared to experts.

To explain the role of cognitive load for learning design, CLT distinguishes four types of *learning mechanisms*: learning tasks, supportive information, procedural information and part-task practice [15]. Table 3 gives an overview. Next, we briefly describe these learning mechanisms.

*Learning tasks* are "concrete, authentic, whole-task experiences" [27, p. 43]. Learning tasks are equivalent to what the MWBL calls learning through experience, i.e. the work on actual maintenance tasks in a software maintenance environment. Like CLT, other recent theories of learning and instruction emphasize the importance of real-life tasks, which help learners to integrate knowledge [29]. Among learning tasks, different *task types* are distinguished. *Conventional learning tasks* require the learner to find the solution to a given problem. *Completion learning tasks* specify part of the solution and leave the completion of the solution to the learner. In *imitation learning tasks*, the learner is given a solution to a problem and asked to apply the

same solution approach to a highly similar problem. In *worked-out examples*, the learner is presented the solution of the problem and asked to reflect it [27].

*Supportive information* provides "the bridge between what learners already know and their work on the learning tasks" [27, p. 46]. Three forms of supportive information are distinguished: mechanisms that help the learner to build mental models, i.e. conceptual knowledge about how the task-related world is organized; mechanisms that help the learner to acquire cognitive strategies such as problem-solving heuristics; and cognitive feedback [27].

Finally*, procedural information* and *part-task practice* support the learner in performing procedures which are frequently carried out in the same manner. *Procedural information* includes information displays, demonstrations and corrective feedback. *Part-task practice* is repetitive practice of such procedures and aims at automating task execution (Van Merriënboer, Clark, & De Croock, 2002).

**Table 3.** Learning Mechanisms in Cognitive Load Theory

| Learning Mechanism Types | Learning Mechanisms |
|---|---|
| Learning Tasks | Conventional learning tasks |
| | Completion learning tasks |
| | Imitation learning tasks |
| | Worked-out examples |
| Supportive Information | Mechanisms to acquire mental models |
| | Mechanisms to acquire cognitive strategies |
| | Cognitive feedback |
| Procedural Information | Information displays |
| | Demonstrations |
| | Corrective feedback |
| Part-Task Practice | Repetitive task practice |

The combination of learning mechanisms in CLT is driven by the need to keep the load on the learner at a manageable level while leveraging the benefits from real-life learning tasks. Three factors influence the load a learner perceives while working on a task: task recurrence, task complexity, and the expertise of the learner.

CLT distinguishes between *recurrent and non-recurrent tasks*. Recurrent tasks are routine tasks that are always executed in a similar manner. In contrast, constituent knowledge for non-recurrent tasks varies from problem to problem situation [27]. The execution of non-recurrent tasks is "guided by cognitive schemata that steer problem-solving behavior (cognitive strategies) and allow for reasoning about the domain (mental models)" [27, p.42]. Software maintenance tasks may comprise both recurrent and non-recurrent underlying tasks. For instance, checking in source code into a code repository system, execution deployment scripts, and updating the defect status in an issue tracking system are recurrent maintenance activities. Other maintenance activities are non-recurrent problem-solving and, hence, require cognitive strategies and/or mental models. This is true for all software defects or enhancements to which no standard solution procedure is applicable. Whereas non-recurrent tasks may impose high load on the learner, recurrent activities do not. Supportive information aids the

learner to perform the non-recurrent aspects of learning tasks. In particular, supportive information which is elaborated by the learner before the work on learning tasks, equips the learner with schemas, which help relate information to higher-order chunks during task execution. As a consequence, load during the work on non-recurrent aspects of learning tasks decreases. By contrast, procedural information and part-task practice support the learner in executing the recurrent aspects of learning tasks. As load is less an issue in recurrent learning tasks, procedural information may be presented during the work on learning tasks. Table 4 summarizes the relationship between learning mechanisms types and task recurrence.

**Table 4.** Learning Mechanisms and Task Recurrence

| *Learning Mechanism Type* | *Recurrent vs. non-recurrent tasks* |
|---|---|
| Learning Tasks | Recurrent and non-recurrent tasks |
| Supportive Information | Non-recurrent tasks |
| Procedural Information | Recurrent tasks |
| Part-Task Practice | Recurrent tasks |

The load on the learner further depends on *task complexity*. Complex tasks require the learner to consider the relationships between multiple elements at the same time, which imposes high load. In contrast, simple tasks allow the learner to serially process elements, resulting in low load [15].

Lastly, the *expertise of the learner* influences load. Experts are able to aggregate information to large chunks and reduce thereby cognitive load [28], whereas the same material is clustered to smaller and thus more chunks by novices. Hence, novices are more likely to suffer from overload. Expertise explains why effective learning mechanisms may change as learning unfolds. As learners develop more powerful schemas over time, they are able to relate information to larger chunks of information, which increases their expertise. All other factors equal, the load on the learner shrinks over time as a consequence. Figure 2 illustrates this by showing four scenarios of the cognitive load on the learner in function of task complexity and initial expertise.
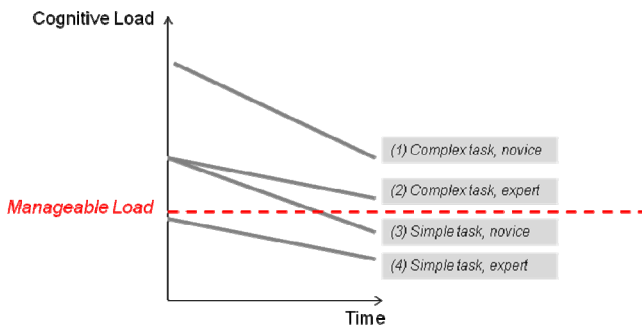


**Fig. 2.** Cognitive Load on the Learner as a Function of Time All Other Factors Being Equal (illustrative)

To prevent overload, CLT recommends using *load reduction strategies*. As can be seen illustratively from Figure 2, load reduction strategies are at least initially needed in scenarios 1, 2 and 3 as in these scenarios manageable load is exceeded. The strongest load reduction is required at the beginning of the learning process in scenario 1. CLT describes three strategies to reduce the load during learning tasks: the use of simplified task types, simple-to-complex sequencing of learning tasks, and supportive information. *Simplified task types* reduce the number of dependencies the learner has to consider while working on a learning task. Load is most strongly reduced by the use of worked-out examples, while completion problems and imitation tasks lower load to a lesser extent. *Simple-to-complex sequencing* of tasks suggests assigning the learner first the least complex tasks, while complexity may subsequently be increased. *Supportive information* prior to work on the learning tasks equips the learner with powerful mental models and cognitive strategies that help him to chunk information at higher levels while working on the learning task. The use of load reduction strategies may be illustrated with regard to scenario 1 in Figure 2. At the beginning, load needs to be significantly reduced to reach the manageable level. Learning tasks may therefore take the form of worked-out examples *(simplified learning task type)*. In addition, the learner is assigned the least complex of all learning tasks (*simple-to-complex sequencing*). Furthermore, the learner is presented supportive information before working on the learning task, e.g. through a presentation session and studying a problem-solving guideline *(supportive information)*. In contrast, the learner in scenario 4 may start directly working on conventional learning tasks without being presented any supportive information beforehand.

## 4.2    Implications for Learning during the Transition Phase of Offshore Projects

Next, we discuss what implications CLT has on the combination of learning mechanisms in the IS offshore outsourcing transition. Like in the discussion of the Model of Work-Based Learning, we proceed by assigning learning mechanisms in the offshore outsourcing literature to notions of CLT. This assignment is displayed in Table 5.

We classify story-telling and job-shadowing as worked-out examples since the learner is presented the solution of a real-life task. While the existing offshore outsourcing literature does not report the use of imitation tasks or completion tasks, both mechanisms may be possible load-reduction techniques in offshore projects. For instance, an expert engineer may specify the detailed design of a modification request and leave only the implementation to the software engineer. This completion task imposes less load on the learner as compared to a conventional task, which we equate with learning by work on actual maintenance tasks. A vast range of mechanisms is classified as supportive information. All these mechanisms aim at the construction of mental models or cognitive strategies prior to or after learning task execution. Learners receive procedural support when they are guided by a mentor or study procedural guidelines while working on recurrent tasks. No studies report the use of part-task practice in offshore software projects. A possible explanation for this is that very high levels of automaticity in recurrent task execution are not needed in software maintenance.

**Table 5.** Learning Mechanisms in Cognitive Load Theory and Offshore Outsourcing Literature

| Learning Mechanism Type | Learning Mechanism | Learning Mechanisms in Offshore Outsourcing |
|---|---|---|
| Learning tasks | Worked-out examples | Story-telling, job-shadowing |
| | Imitation Tasks | - |
| | Completion tasks | - |
| | Conventional tasks | Learning-by-doing |
| Supportive in-formation | Mechanisms to build mental models, mechanisms to build cognitive strategies, cognitive feedback | Documentation and face-to-face pres-entations on non-recurrent task aspects, role-plays, case studies, task simulation, written tests, quizzes, task simulation, playback, group discussion, performance feedback |
| Procedural in-formation | Information displays, demonstrations, corrective feedback | Mentor support during recurrent task execution, documentation and face-to-face presentations on recurrent task aspects |
| Part-task practice | | - |

CLT has implications for the effective *combination of learning mechanisms* during the transition phase of offshore projects. In contrast to the Model of Work-Based Learning, CLT allows to include the time dimension into theorizing. At the beginning of the transition phase, work on actual maintenance tasks is likely to overload the software engineer. CLT suggests using job-shadowing or story-telling instead of actual maintenance tasks at that point. These activities should be preceded by supportive information on the subject area of the tasks. This may include face-to-face presentations or studying documents. As the understanding of the engineer increases, job-shadowing and story-telling are replaced by imitation and completion tasks, while still supportive information is assimilated before task execution. During task execution, procedural information on recurrent task aspects is given by expert engineers or guidelines. Once the engineer has developed powerful schemas, he works on conventional maintenance tasks, while supportive information is faded out. At the same time, the engineer may work on more and more complex tasks.

CLT also provides implications on how *situational factors* impact the process. Complex tasks impose high load on the learner and require strong load reduction as a consequence. Complex maintenance tasks may be found in contexts in which dependencies among application components and dependencies between the application logic and the application domain are numerous. In such contexts, an engineer needs to consider a huge amount of relationships to avoid undesired side-effects by the solution to a modification request. To reach manageable load in such contexts, transitions of complex tasks demand for extensive initial use of job-shadowing and story-telling, deep elaboration of supportive information before working on the task and rigorous simple-to-complex sequencing. In contrast, transitions that involve relatively simple tasks may start with modification requests for which the detailed design is given

(completion task) and medium elaboration of supportive information through presentations and document study. Similar to the impact of task complexity, the expertise of the learning software engineer impacts the extent of load reduction. Engineers who have valuable working experience in similar applications, domains, and technologies, may start earlier working on conventional maintenance tasks as compared to junior engineers. Finally, the extent to which recurrent or non-recurrent tasks dominate impacts the relative importance of supportive information and procedural information in learning mechanism portfolios.

# 5    Illustrative Longitudinal Case

This section illustrates the implications of the MWBL and of CLT on learning in the transition phase of offshore outsourced projects by means of an illustrative longitudinal case. The case describes the learning process of an Indian software maintenance engineer (learner) at a European financial service provider. The learner worked for a major Indian service provider and spent 5.5 months at the client site to the acquire the knowledge required for the maintenance task. He previously had five years of professional experience which was closely related to the subject area of the task. The maintenance task comprised the detailed design, implementation and unit-testing of software enhancements and defect solutions in a data warehousing environment. The application transformed data from multiple feeder systems so that it could be used by business reporting systems. The team comprised the Indian engineer, one other engineer who joined the project roughly at the same time, two experts for the maintenance task (expert A and expert B), one requirements engineer, one tester, and a supervisor. Besides the Indian engineer, all five staff fulfilled the roles of knowledge sources. In addition, a knowledge mediator was involved in knowledge transfer. The knowledge mediator accompanied the knowledge-transfer process based on an internally developed knowledge transfer methodology . The methodology included jointly eliciting knowledge components in sessions facilitated by the mediator, visualizing knowledge components in a conceptual map, conducting presentations on the individual knowledge components, and codifying knowledge. During the first 13 weeks, the engineer worked on five software modification requests which were assigned to him by his supervisor. They were only loosely related to each other.

Next, a short narration of how learning mechanisms were combined over the first 13 weeks follows[3]. In the first two weeks, the engineer participated in formal presentations with his supervisor and expert A. The expert walked the engineer through the few software documents available in English. In addition to the sessions, the engineer spent several hours a day with document study and code study. In the second and third week, the engineer participated in three overview presentations. The presentations were facilitated by a knowledge mediator. They resulted in the creation of a conceptual map of the system landscape and in a prioritization of subject areas for subsequently planned

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[3] The data sources included nine interviews, project documents, and observation notes from three knowledge elicitation sessions.

knowledge-transfer sessions. In addition, the engineer participated in two formal presentations about the software architecture and a technical topic. Furthermore, expert A repeatedly held short spontaneous presentations on various topics which came up during the tasks assigned to the Indian engineer and the other engineer who had joined the project at the same time. Two of these presentations were conducted in the first week, while the frequency of these presentations decreased until the end of the third month.

At the end of the second week, the engineer was assigned *request 1,* which he worked on until week 7. The request was a purely technical implementation which demanded little understanding of the application. The engineer received a detailed requirements specification which included the detailed technical design of the solution. He engaged in discussions with the tester and the requirements engineer to make sense of the concepts mentioned in the requirements document. Although the task itself did not require significant understanding of the application, the engineer reflected on the functionality implemented in those sections where code changes had to be performed. To better understand the functionality in these sections and to clarify whether the changes he planned to implement were correct, he actively engaged in informal discussions with the two experts. In week 4, expert B suggested using a pattern for the task implementation of which the learner had not been aware. The engaged in an informal discussion and quickly implemented it. In week 5, expert A performed a review of the code prepared by the engineer for the first task. In an informal discussion, the expert explained what changes to the solution he suggested and why these changes were necessary. After the code was implemented and tested, the engineer checked in the code into the code repository system and deployed the changes to various environments. During these recurrent activities, he was supported by expert B. In week 7, the engineer finished request 1 successfully and was assigned *requests 2 and 3*. Both requests were simple tasks which he finished within a few days. The requests required some understanding of the application. He referred back to the conceptual map drawn during the presentation sessions and to some documentation. In addition, he engaged in informal discussions with the requirements engineer and expert B to understand the concepts described in the requirements document, the detailed changes that needed to be made and why the changes were necessary. Again, he received support by expert B on recurrent aspects of the software development processes specific to the financial service provider.

In week 9, he was assigned *request 4*. The request was of medium complexity because it involved coherent changes in a relatively large amount of database tables. After informal discussion with the requirements engineer and expert A, he was able to implement the changes according to the solution plan given by the expert. In addition, request 4 involved extensive unit testing of the changes made. The unit testing required detailed knowledge of many metadata records which steered data transformation. Within the given time constraints, the leaner faced difficulties in grasping how the large amount of dependencies imposed by metadata impacted data transformation during testing. Consequently, the expert engineer performed the test, while the Indian engineer observed him and engaged in an informal discussion. After 2.5 weeks, request 4 was finished and the engineer was assigned *request 5*. In request 5, the requirements document included highly detailed design specifications. The engineer engaged in extensive informal discussion with the requirements engineer to make sense of the requirements and

understand what changes needed to be made. During work on this task, expert B explained him a heuristics for access-granting problems in an informal discussion. The conceptual map created in the initial presentations was highly helpful for this task because it helped to understand the dataflow. After three weeks, the request was completed successfully. During the work on requests 4 and 5, the engineer did not need significant guidance on recurrent aspects of the software development process.

The supervisor of the engineer was highly satisfied with the learning outcomes. She had expected the engineer to be able to carry out basic tasks with support by the senior engineers. This expectation was fulfilled. The leaner declared to have met his own expectations on the learning process, although he acknowledged that he might have learned faster if he had enjoyed more formal presentation. In addition, the fact that few English documents were available hampered learning from his perspective.

## 5.1   Case Interpretation through the Lens of Work-Based Learning

In Table 6, the learning mechanisms used in the case are assigned to the four learning mechanisms in the MWBL. It is apparent that initially significant effort was made to acquire *explicit* knowledge through conceptualization and reflection activities. In particular, the three sessions facilitated by the knowledge mediator were effective to identify explicit knowledge components and arrange them in a conceptual map. The explicit understanding acquired in these sessions helped the software engineer to relate information to an overall declarative schema of the application. This indicates that a methodology for identifying and codifying knowledge increases the effectiveness of conceptualization activities. However, the knowledge acquired through conceptualization was not sufficient for making sense of requirement documents. Instead, the Indian engineer had to make intensive use of reflection activities, mainly through informal task-related discussion, in order to acquire sufficient conceptual and thus explicit knowledge to understand the documents and the solution approaches. The successful completion of the requests demonstrates that the explicit knowledge which was required for these tasks was successfully acquired. This supports that conceptual and reflection activities may result in explicit knowledge acquisition.

Although considerable conceptualization and reflection activities took place, the engineer spent the majority of his time in experience activities while working on the requests which were assigned to him by his supervisor. After completing requests 1 to 3, he had acquired sufficient *tacit* knowledge regarding recurrent software development activities such as checking in code and execution deployments. Learning can be inferred from the independent execution of these tasks during the work on requests 4 and 5. This supports the claim that experience results in tacit knowledge acquisition.

The Model of Work-Based Learning predicts that effective learning requires the use of all four learning activity types. In the case, we observed conceptualization, reflection and experience activities, but no experimentation activities. Despite the absence of experimentation, the learner managed to acquire sufficient knowledge to meet the expectations of his supervisor concerning independent task execution. We argue that this is therefore a case of effective learning. Hence, this case does not fully confirm the prediction of the model of Work-Based Learning. The effectiveness of

**Table 6.** Learning Mechanisms in the Illustrative Case Through the Lens of Work-Based Learning

|  | *Explicit Knowledge* | *Tacit Knowledge* |
|---|---|---|
| **Theory** | **Conceptualization** Initial presentation by the supervisor (w1) Initial presentation by the expert engineer and two team presentations (w1-3) Repetitive spontaneous presentations by the expert engineer (2 per week in w1, then until w13 with decreasing frequency) 3 facilitated sessions to design conceptual map of software architecture (w2-3) 20 hours of document study (w1-2) | **Experimentation** |
| **Practice** | **Reflection** 30 hours of code study (w1-2) Informal discussions with the requirements engineer on the requirements (w3-13) Informal discussions with the engineers on solution approaches (w3-13) Code review sessions (w5, w8, w9, w12) Job-shadowing of testing task 4 (w10) | **Experience** Work on requests 1 to 5 supported by engineers (w2-13) |

learning in this case may be explained by the fact that experimentation activities have been substituted by experience and conceptualization activities. In fact, using only three of the four activity types allow to acquire both explicit and tacit knowledge in both the simplified realm theory and the context-related world of practice. There may be economical reasons for partially substituting experimentation by experience activities in software maintenance contexts. While experimentation activities cause costs for the preparation of learning materials and the correction of outcomes, no learning material needs to be prepared for experience activities given that the learner works on actual software maintenance tasks. Furthermore, while the output of experimentation activities consists in the learning progress of the engineer, experience activities additionally result in software production outcomes.

## 5.2 Case Interpretation through the Lens of Cognitive Load Theory

CLT predicts that, depending on task complexity and expertise, non-recurrent learning tasks may cause cognitive overload if they are not accompanied by load reduction strategies. Table 7 displays the extent of load reduction during the work on the five requests.

**Table 7.** Learning Mechanisms in the Illustrative Case Through the Lens of Cognitive Load Theory

|  | *Load Reduction through Simplified Task Types* | *Load Reduction through Simple-to-Complex-Sequencing* | *Load Reduction Through Supportive Information* | *Overall Load Reduction* |
|---|---|---|---|---|
| *Request 1 (weeks 2-7)* | Medium (completion task) | High (simple task) | High (extensive informal discussions) | High |
| *Request 2 (w7-8)* | Medium (completion task) | High (simple task) | High (some informal discussions, documentation used) | High |
| *Request 3 (w8)* | None (conventional task) | Very high (very simple task) | High (some informal discussions, documentation used) | Medium-high |
| *Request 4, implementation (w8-9)* | Medium (completion task) | Medium (medium task complexity) | High (extensive informal discussions) | Medium-high |
| *Request 4, unit testing (w10)* | High (worked-out example) | Low (complex task) | High (extensive informal discussions) | Medium-high |
| *Request 5 (w11-13)* | Medium (completion task) | Medium (medium task complexity) | High (extensive informal discussions, documentation used) | Medium-high |

As predicted by cognitive load theory, initially high load reduction is necessary. For instance, in tasks 1 and 2 load is reduced by specifying in detail the solution steps (completion tasks), by assigning simple requests to the engineer and by informal discussion and studying documents beforehand (elaboration of supportive information). While load reduction remains at significant levels during the three months, it slightly decreases to medium-high levels. It is interesting to note how the distribution of load reduction strategies changes from the implementation of request 4 to the unit testing of request 4. Given that the unit-testing task was more complex than the implementation, the additional load due to task complexity had to be counterbalanced by choosing a strongly simplified task type for unit testing by means of a worked-out example. Overall, the case is consistent with the prediction of CLT that effective learning requires initially high load reduction which is subsequently faded out.

Five years of prior experience in the area of data warehousing helped the engineer to relate information presented during knowledge transfer to concepts acquired in previous projects. The expertise of the engineer could hence be evaluated as medium. It is interesting to note that despite medium expertise, initially high load reduction was required. This confirms the claim of CLT that authentic learning tasks may impose load on the learner which exceeds manageable load by far. A comparative analysis of multiple cases can help to better discern the role of expertise.

# 6    Implications

We began with the perspective that, in maintenance offshore outsourcing, learners often need to acquire huge amounts of knowledge from experts in a compressed time frame. Next, we noted that existing literature provides limited evidence and explanation on how learning mechanisms are combined in the transition phase of such projects. We then argued that the MWBL and CLT are promising learning theories to explain the effective combination of learning mechanisms during transition. We discussed the implications from the theories for learning in the transition phase of offshore projects and illustrated the findings through a single longitudinal case.

The discussion showed that both theories yield explanatory power for understanding the combination of learning mechanisms in the transition phase. The *MWBL* explains which learning mechanisms result in explicit and respectively tacit knowledge acquisition. In addition, the model reveals which mechanisms, precisely those assigned to the practice mode of learning, help to understand the context of the maintenance tasks. Taking the dimensions together, the model allows evaluating the comprehensiveness of learning mechanism portfolios. In addition, the model may help balance the composition of learning mechanisms in situations in which a particular emphasis is needed on either explicit or tacit knowledge and in situations in which contextualized knowledge is of particular importance. The model is, however, limited in two ways. First, the model is static. Hence, it does not allow theorizing on the combination of learning mechanisms over time. Second, the model does not explain how issues of information overload, which are characteristic of maintenance offshoring, can be addressed in the definition of learning mechanism portfolios.

Unlike the Model of Work-Based Learning, *CLT* allows theorizing on *combining learning mechanisms over time*. The theory assigns central importance to the use of learning tasks, which correspond to experience activities in the Model of Work-Based Learning. However, CLT posits that authentic learning tasks need to be accompanied by load reduction strategies to avoid information overload. The load reduction strategies determine how the portfolio of learning mechanisms evolves over time. To reduce high cognitive load on novices who work on complex, non-recurrent particular tasks, a step-wise strategy to reduce load is required. Initially, it appears most suitable to start with simple learning tasks  and to rely on job-shadowing and story-telling (worked-out examples) combined with intensive elaboration of documents, formal presentations, informal discussions, and feedback (supportive information). Over time, learners develop schemas that reduce load as they enable to chunk information to larger units. The portfolio of learning mechanisms may then change to include maintenance tasks with partially specified solutions instead of job-shadowing and story-telling. Supportive information through documents, presentation and discussions may be faded out, but still be present at this stage. Later on, when schemas have become more powerful, learners may work on conventional maintenance tasks with little or nor supportive information. The findings from the illustrative case support this claim. While initially high load reduction was necessary, it decreased over time mainly through the instrument of simple-to-complex sequencing. In fact, after the learner had developed schemas during the initial three requests, his supervisor as-

signed him more complex tasks. However, when task complexity was too high during the unit test of request 4, load by high task complexity was counterbalanced by choosing a simplified task type.

CLT also provides implications of how situational factors impact the learning process. Complex maintenance tasks, which per definition include a high number of interrelated elements to be combined, impose higher load on learners as compared to simple maintenance tasks. Consequently, higher initial load reduction is required. The expertise of the learner may further impact load levels, so that stronger load reduction is required for novices. Finally, CLT indicates that effective learning mechanism portfolios might differ in function of the relative weight of recurrent versus non-recurrent tasks. When non-recurrent tasks dominate, a strong emphasis is needed on mechanisms that support the development of mental models and cognitive strategies, such as face-to-face presentations, documentation and task simulation. In the illustrative case, the conceptual map developed in facilitated knowledge transfer sessions was a powerful tool for the development of a mental model. By contrast, when plenty of recurrent tasks need to be learned, procedural support by experts or guidelines during task execution gain importance.

This paper makes several contributions. First, we contribute to IS research by introducing two learning theories to the discipline. We showed that both theories yield explanatory power for understanding learning mechanisms in the offshore outsourcing transition phase. We did so by relating the central constructs of both theories to the literature on knowledge transfer in offshore outsourcing. Second, we add to offshore outsourcing research by theoretically arguing how learning mechanisms are effectively combined in the transition phase in function of task attributes, knowledge attributes and learner's attributes. Third, we contribute to learning research by extending the application of the Model of Work-Based Learning and CLT to the field of learning software maintenance tasks.

We acknowledge limitations of our paper. While the paper offers new theoretical avenues for future theoretical or empirical research, we do not formulate testable propositions for effective learning in offshore projects. In addition, although we relate constructs of learning theories to notions from offshore research, we do not make suggestions on how to operationalize the constructs. For instance, the evaluation of load reduction strategies in the illustrative case study would have benefited from precise measures.

The paper leaves avenues for future research. Scholars may develop testable propositions based on the MWBL or CLT and test these propositions in empirical work. CLT, in particular, offers the opportunity to build process theories of learning of software maintenance tasks. The time perspective which is opened by the use of cognitive load theory calls for investigating further attributes of the transition process such as the transition duration. It may be insightful to examine how task complexity, expertise and other situational factors influence the length of the timeframe after which no load reduction is required. IS scholars may also consider to apply CLT to other areas in IS research in which load is an issue. There is also potential to incorporate the time aspect into the MWBL in an exploratory manner. In this realm, it also appears fruitful to integrate MWBL and CLT. Both theories show overlaps in the way

learning mechanisms are conceptualized which provides the very basis for integration. These situational factors of both theories may then be used in a complementary way to explain the combination of learning mechanisms over time. Finally, future research may deduct methodologies for knowledge transfer in offshore projects from the MWBL and CLT and evaluate these methodologies through action design research.

Our paper produces insightful implications for practice. Managers in offshore projects receive guidance in the design of learning mechanism portfolios. As per our discussion of the Model of Work-Based Learning, such portfolios need to be comprehensive in nature. Relying solely on, for instance, documentation or on experiential learning will not result in effective learning. Instead, portfolios should be comprehensive as per the dimensions of the model. They may include document study, presentations, informal discussions, work on learning tasks, job-shadowing, story-telling and code reviews. The relative emphasis on mechanisms should depend on the relative importance of explicit versus tacit knowledge. The discussion of CLT in the context of offshore outsourcing reveals that effective learning requires careful management of load depending on task complexity and the expertise of the learner. Transition managers should first evaluate these contingency factors and subsequently allow for appropriate load reduction strategies such as simple-to-complex sequencing of tasks, worked-out examples or completion tasks and sufficient elaboration of supportive information. These considerations have also impact on the choice of distance and the planned duration of the transition phase. Some load reduction strategies may be more effective in collocated settings. The discussion of the fading of load reduction strategies shows that depending on task complexity and the expertise of the learner, transitions may take a long time. This needs to be considered early enough during transition or succession planning. Lastly, the analysis of the illustrative case shows that suitable methodologies for knowledge transfer planning and execution increase learning effectiveness. Companies should invest in building and refining methodologies. Methodologies should include comprehensive sets of learning mechanisms such as on-the-job training, job-shadowing, presentations and document study. In addition, they should provide guidance on how mechanisms are combined over time to balance the load on the learner.

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# Understanding Resistance in IT Outsourcing: A Service Provider Perspective

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**Abstract.** Previous research identified that service providers are struggling with the transition phase. The aim of this research is to create a deeper understanding of the effects of service provider resistance to change on the duration of the transition phase. This paper presents the results from an explorative empirical study, based on five service providers in the field of IT outsourcing. Our findings are twofold. First, we found that all the providers under study indeed experienced the transition phase as a struggle and resistance to change was perceived as fierce. Second, resistance to change was found in each organisational subunit and, as such, the process of change can be described as incremental. Since the topic of resistance to change from the perspective of service providers has hardly been researched, our research aims to contribute by partly filling this gap.

**Keywords:** outsourcing, transition, strategic management, resistance, change.

## 1 Introduction

Adapting to the pace of changing market circumstances has been a recurring challenge for firms. This challenge becomes even more important as the current economic situation can be characterized as a downturn. In order to respond effectively to changing markets the outsourcing of the IT function has become part of the sourcing strategy of many firms. The rationales of a firm's sourcing strategy vary. Examples include quality improvement, access to external capabilities, scalability of resources, and a rationalisation of a firm's IT legacy environment. However, implementing a sourcing strategy may turned out to be a daunting experience. Firm's that decide to outsource their IT function face the risk of resistance to change within their organisation to some extent. Research [1] suggest that resistance in outsourcing initiatives may be related to job losses and political issues. Importantly, resistance to change may threaten a firm's ability to adequately respond to business needs.

Yet, little is known about the extent to which service provider's deal with resistance on an organisational level, specifically during the transition phase of an outsourcing arrangement. The transition phase can be characterized as a major change

programme that affects multiple aspects such as the organisational structure, sourcing capabilities, governance processes and behaviour. Since service providers are insourcing clients' assets and/or staff their organisation is also affected as they have to adapt to changing circumstances. Literature reveals that the transition phase is considered as risky and needs to be managed carefully [2] as it may influence the relationship between a client and provider significantly. Previous research [3],[4] identified that service providers generally struggle with the transition phase, often resulting in a fragile start of a service delivery that initially looked promising. These findings are consistent with market research [5] and previous studies that suggest that over two-thirds of the problems in unsuccessful engagements arise due to failed or poor transitions [6].

The objective of our study is to examine the effects of service provider resistance to change on the duration of the transition phase. In this paper we study resistance on an organisational level within a service provider organisation. In particular, this research addresses the transition phase of an outsourcing arrangement. To attain our research objective we opted for an exploratory case-study-based approach. The empirical case studies were analysed to evaluate the degree to which resistance will occur in a provider organisation and, consequently, cause obstacles during the transition phase. This research theme has a strong strategic relevance, as dealing with resistance properly is increasingly considered as a strategic factor in sourcing performance. This paper is organized as follows. Section 2 presents a literature review addressing resistance to change and subsequently, three related research constructs: responsibility of organisational tasks, co-ordination of labour and the alignment of IT processes. Section 3 explains the research approach while the findings are discussed in Section 4. Finally, our conclusions and recommendations are presented in Section 5.

## 2      Resistance on an Organizational Level

To strengthen their market position, firms regularly decide to outsource commodity tasks that can be provided by the market. Consequently, firms develop sourcing strategies to determine what type of activities are core and which are non-core. As a result, firms are more able to support their business strategies [2] aimed at addressing competitive challenges. However, a client's outsourcing decision is affected by the process that governs the relationship with its service provider. Consequently, providers have to adapt to the client's processes which may result in internal resistance. The ability of a provider to adapt is dependent on their sourcing capabilities, their organisational structure and the way in which they are able to create a fit between both aspects [7]. The basic premise underlying this research is that clients have to deal with resistance from the perspective of providers as they have to adapt to changing client circumstances. Resistance from the perspective of the provider can result in a negative impact on the client side, for instance, an unintended increase of the duration of the transition phase. Moreover, the quality of IT service delivery may decrease while the costs to abrogate the lack of quality will increase. Interestingly, the transition phase of an outsourcing arrangement can be seen as the first test whether a provider is able and willing to adapt to a firm's environment.

We build from the assumption that outsourcing providers who are able and willing to adapt their organisational structure and processes during the transition phase may reduce the degree of resistance within their organisation.

## 2.1    Resistance to Change

During the past decade the issue of resistance to change and organisational change clearly received attention. Resistance can be defined as behaviours intended to prevent the implementation or use of a system [8], [9] and on the ability of an organisation to change their systems [10]. Literature [9] reveals that organisational inertia as a means to preserve a particular course of action cannot be understood unless it is placed in relation to how changes take place [11], [12]. In other words, there is no meaning without context. In this paper we specifically refer to the aspect of resistance during the transition phase of an outsourcing arrangement. From an organisation behaviour perspective, we study the issue of resistance within the service provider organisation.

   A review of previous studies reveals that resistance to change is one of the most widely accepted mental models that drive organisational behaviour [12]. Examining theories of resistance, [13]   identified six distinct theoretical perspectives, rational, structural human relations, interactionist, organisational politics, and class politics. These perspectives differ, for instance, with respect to their social setting, their view of technology and their organisational concepts. [8] summarizes these perspectives into three main theories: resistance that is determined internally, resistance that is determined externally (e.g. environment) and resistance that is the result of the interaction between systems (e.g. organisations).  As we focus on the service provider side the theory of resistance is related to the internal organisation that fits with our approach. In order to study the degree of resistance we apply the assumption about organisational contexts of use. To understand resistance, it is useful to describe an organisation in terms of the degree to which people and subunits (e.g. internal departments) are believed to have congruent goals and values or divergent ones [8]. In contrast to this Rational view, the non-Rational view assumes that people or subunits differ with regard to their goals in the organisation. This means that, for instance, subunits focus on achieving their own goals, rather than the global organisational goals.

   Our argumentation logic is that service providers need to understand and consequently reduce the degree of resistance during the transition phase in order to minimize the hurdles of insourcing a client's assets and/or staff. In addition to the transfer of knowledge, a transition of an IT function requires an adaptation of existing operational routines. The transfer of routines is dependent on various aspects, namely the context in which the transition takes place, the emergent quality of routines and partial inarticulacy such as tacit knowledge [1], [14]. To some degree transition will result in an adaption of the organisational structure and accompanying processes of service providers to ensure operational performance towards their clients. Consequently, the transition phase can be characterised as a major change influencing the provider's personnel and organisation. These change aspects, that are associated with tasks, roles, responsibilities, might lead to resistance and refer to the

socio-technical variant of the theory of internal resistance. As such, it is expected that service providers who manage the organisational dimensions proactively will ultimately succeed in completing the transition based on the expected transition period.

To analyse the perceived degree of resistance three main organisational dimensions can be identified: a) the distribution of responsibility for organisational tasks across various roles, b) co-ordination around the division of labour and c) the alignment of governance processes. These organisational dimensions are further explained in the following sections. Addressing the issue of resistance to change we assert that people do not resist to change per se. As part of an organisational structure people may resist loss of control, loss of their assigned tasks, loss of comfort [12], or fear of the unknown. In addition, we have to make a distinction between the perceived internal resistance and their external effects. Whereas internal resistance is related to organisational structures and mechanisms such as power and dependencies, their external effects are related to a client's beliefs about willingness and cooperation to change. We define perceived degree of resistance as:

'*The growing number of escalations and disputes as result of a challenging attitude of a service provider to a client's requests, demands and claims'*.

## 2.2    Distribution of Responsibility of Organisational Tasks

Formal organisational design, tasks and the roles that people play, including the competences and responsibilities involved have been investigated extensively in organisational literature [15]. Existing literature suggests that the nature of organisational design in industrial versus post-industrial firms can be regarded as mechanistic  versus organic [16], [17], [18]. [16] argues that the mechanistic paradigm is effective when environments have a high degree of certainty, technologies tend to be routine, organisations are designed to handle large volumes (e.g. products or services) and employees are treated as just another resource. With regard to the mechanistic paradigm, the responsibility of organisational tasks is often distributed in a vertically oriented organisational structure that can be described as functional and bureaucratic. The organic paradigm, on the other hand, is characterized by an unstable, even chaotic nature of the external environment. The responsibilities of a firm's organisational tasks are frequently distributed in horizontally oriented teams. Typical features of these types of organisational tasks are teamwork, face-to-face interactions, learning and innovation. The way in which a firm applies its organisational design, tasks, and roles are related to its external environment. In the case of outsourcing providers, the external environment is defined by the client organisation and by market dynamics [19], [20].

## 2.3    Work-Related Communication and Coordination of Labour

With regard to work-related communication we can distinguish characteristics like speed, complexity and regularity. Applying a management model where control is predominant, vertical and horizontal communication will be slow, difficult and

limited in nature. Organisations that apply a management model that is based on co-operation will find that the level of horizontal communication will increase and the nature of vertical communication will change. The aspect of co-ordination of labour is related to control, and more specifically to trust and distrust between organisational subunits. In particular, trust has been identified as an essential factor that contributes to the success of a client-provider relationship as well as to performance [21]. With regard to an outsourcing arrangement, the presence of trust is important as it is based on the interactions between a client and a provider. Trust between client and provider representatives result in co-operation that assumes horizontal communication. Mutual interactions are both formal and informal and go beyond the rules and agreements as stated in a contract. Moreover, the presence of trust will decrease the possibility of resistance within the arrangement. As IT outsourcing arrangements have become more difficult due to the use of blended sourcing strategies, e.g. onshore, nearshore and offshore, the co-ordination of labour and work related communication will be more difficult in the case of distrust between parties involved in the arrangement from different geographic locations and cultural background.

### 2.4     Alignment of IT Processes

As a result of a client's decision to outsource their IT function, interrelated processes need to be established to ensure a sound demand and supply of IT services. While parts of the IT processes will be executed by the service provider, new processes might be created to support the new tasks of the client's retained IT organisation. To support an end-to-end delivery, interrelated IT processes between clients and service providers need to be aligned. Processes are related to IT capabilities that consist of IT based assets and routines that support the exchange of IT services [22]. Examples include demand management, change management, and service management (e.g. incidents). The way in which these processes are managed depends on the organisational structures as applied by the client and provider. Consequently, these processes need to be managed from the client up to the provider's delivery units. Moreover, the level of formalisation as applied within the organisations of the client and the provider influences the way in which the processes are aligned. Existing literature [23] indicates that we can distinguish between a high and a low level of formalisation. A high level of formalisation is related to a mechanistic form, whereas a low level is related to an organic structure. Depending on its nature, formalisation can either limit or support centralisation, flexibility and autonomy within an organisation.

## 3     Research Approach

The unit of analysis in this research is the transition phase of an outsourcing arrangement while the unit of observation in this research is the service provider organisation. Since empirical research from the perspective of the providers is under-researched, literature about resistance during the transition phase of outsourcing arrangements is scarce. Due to the complex nature of outsourcing arrangements, we opted for an exploratory, case-study-based research. This would gain us a deep

understanding of the phenomenon under study [24]. Case study research is one of the most common qualitative methods used in the field of Information Systems [25]. Especially, an in-depth understanding of the effects of service provider resistance to change on the duration of the transition phase may reveal their consequences. As it is difficult to measure the degree of resistance in empirical research we decided to monitor the degree of resistance as perceived by the interviewees. The importance that is attributed to resistance monitoring can be considered as an alternative for direct measurements.

We selected five IT outsourcing providers, two of which operate domestically and three globally. All providers act in a dynamic market. During our empirical research we specifically studied a client case that transitioned their assets and/or staff to the provider under study. Subsequently, we applied a retrospective approach, to study the effects of service provider resistance to change on the duration of the transition phase. Due to the aspect of researchability, we took the decision to study the providers with a focus on the Netherlands. We collected data by conducting in-depth interviews with various provider staff members, including IT executives, transition managers, service delivery managers, and experts positioned across the firm. In this way we apply a cross-section within the organisations to establish a holistic view. All interviewed participants had been engaged in the outsourcing arrangement with the client. This was to ensure internal consistency within the provider organisation. As the interviews were confidential, we anonymised the company names as listed in table 1. The varying hierarchical levels of the interviewed staff members prevent potential limitations of the evolving phenomenon from arising. Interviewees were asked to describe their role during the transition phase and specifically if they perceived resistance as a result of organisational change. Interviews varied from 60 minutes to 90 minutes in duration. Additional information was gathered from outsourcing contracts, satisfaction reports and financial information. All the interviews were then transcribed, and the transcripts were sent to the participants to be confirmed. All interviews were carried out during the period June 2008 up to May 2011.

**Table 1.** Case studies

| Provider case studies | Provider size (fte) | Geographical scope | Client industry | Provider interviews | | |
|---|---|---|---|---|---|---|
| | | | | Executive | Transition manager | IT managers |
| Provider A | 900 | 1 country | Local government | 1 | 1 | 6 |
| Provider B | 3,100 | 2 countries | Telecommunications company | 1 | 1 | 2 |
| Provider C | 47,000 | 17 countries | Banking and Insurance | 1 | 1 | 5 |
| Provider D | 90,000 | 90 countries | Global diversified resource company | 1 | 1 | 6 |
| Provider E | 48,000 | 20 countries | Refining company | 2 | 2 | 7 |

When executing our qualitative research concept maps are used to guide us through the process of data analysis. Since knowledge is fairly nonlinear, concepts can be seen as organized networks. By selecting and organizing relevant information we are able to identify links between concepts, so that we can fathom the data [26]. When executing our qualitative research, Atlas ti v5.2 was used for coding and combing the

interview data. Interview data of the staff members was translated into concept maps. As a result of the coding process, we were able to create more insight and identify relevant concepts and relationships.

## 4     Cross-Case Summary and Discussion of the Findings

Based on the empirical case studies, we analyse the findings of our research in this section. First, we relate our findings to the core constructs as presented in Section 2. We analyse and discuss our findings based on the principle of concept mapping as explained in Section 3.

### 4.1     Resistance on an Organisational Level

With regard to resistance on an organisational level we found that during the transition phase the providers' delivery departments were subject to change as the boundaries of the providers' organisations are shifting. Consequently, a redesign of organisational tasks and activities of the providers under study was required. As a result of this redesign providers became more aware of the impact of their co-ordination of labour. We found that the provider's attention to organisational behaviour was essential as these were necessary to understand and deal with the changing client circumstances. Previous research indicates that the aspect of behaviour can be seen as a primary dimension of resistance that exists across a spectrum, from being passively uncooperative to engaging in physically destructive behaviour [27]. Furthermore, we found that neglecting the aspect of customer intimacy negatively contributed to adapting the organisational structure to support the transition adequately.

   *'In general, it is our belief that the transition phase has the strongest influence on performance. We have the opinion that when completing the transition phase successfully; we have created the required starting point for a stable delivery phase'. (Source: a delivery director).*

However, we found that the providers under study were resistant to change their organisational structure when clients demanded that the providers aligned their own organisational structure with the clients' structure to ensure a sound provisioning of IT services. Relating our findings to the theory of resistance (e.g. determined internally) we identified that providers' organisations were only able to adapt their structure based on small and continuous changes. Interestingly, we found that originally all providers applied a one-size-fits-all approach with regard to their organisational delivery structure. After fierce discussions the providers changed their organisational structure to create a fit with their clients' structure. However, the providers only changed their structure in order to deal with changing demands for their clients. Their organisational structure to support the delivery of IT was not changed. Our findings with respect to the importance of adaptability adds strength to

the non-revolutionary perspective of resistance meaning that organisations can only tackle one problem at the time in a disjointed and contingent manner [28]. This can be explained by the fact that organisations are complex and change is incremental and evolutionary that in turn causes organisational inertia. This is consistent with literature were [29] argues that the more complex the organisation, the less likely is the impact of technical change.

*'The transition phase with our client was definitely painful. We have had some serious discussions about interfacing between both parties. For instance, we just want one client representative who is responsible for submitting new service requests while the client demanded for more. Moreover, at the start of the transition we didn't want to position our own employees at the client's premises to co-ordinate the work. That didn't work after all, so we finally agreed to position five employees at the client side'. (Source: an engagement manager).*

Furthermore, interview analysis of most of the cases confirms that the lack of adaptability has a negative impact on the resistance to change in the providers' organisational structure. However, interviews showed that provider C designed and implemented procedures to guide the adaptability process diligently. We did not expect to find these procedures as previous research encountered severe problems with regard to the provider's ability to adapt [30]. Applying a proactive adaptability strategy positively contributes to achieving clients' sourcing rationales. Analysis of response of the service providers during the transition phase clearly shows that managing change encompasses organisational adaptation.

## 4.2    Responsibility of Organisational Tasks

Addressing the construct of the responsibility of organisational tasks we found evidence that agreements between the clients and providers were ambiguous with regard to the boundaries of the IT domains. In the case study of Provider D we found that the architects of both the client and the provider neglected the importance of clear boundary agreements. This resulted in multiple issues related to the hand-over of process-related activities such as incident management and change management. These ambiguous agreements resulted in fierce discussions between clients and providers.

*'The more demanding a client is, the more capabilities and organisational structure will affect each other. For instance, by supporting our demanding client it is crucial to apply a flexible behaviour.   That's why our floorwalkers work at the client's premises, solve issue's first and register them later'. (Source: a service delivery manager).*

Remarkably, we found that during the transition phase all providers struggled with the initiation of clear agreements with respect to the distribution of the responsibility of organisational tasks. Providers interviewees consider that a lack of unambiguous

agreements increases the degree of resistance on an organisational level. This suggests that the way of working can be described as chaotic to some extent. The results of our research provide strong evidence that the delivery of IT services provided offshore has an impact on the organisational structure as applied by a provider. Based on our interviews with the providers' respondents we found that implementing an organisational structure that contains both on-site and offshore teams increases the complexity. Tasks and corresponding responsibilities of employees requires regular alignment between various teams. As assumed, the providers C, D and E applies the most extensive blended organisational form, deploying teams onsite, onshore and offshore. When compared to the providers A, B and E, the providers C and D apply a more process-oriented approach. However, the organisational structures that were found are socially embedded and complex. This finding is consistent with previous research [31].

*'The importance of the organisational structure and tasks is significant. During the transition period dimensions like decision-making and communication were not aligned properly with the client organisation. We had to adapt our organisational structure and related tasks that improved the performance towards our client'. (Source: a programme delivery manager).*

Moreover, our study shows that the organisational structure and related tasks have a strong impact on the delivery of IT services. In particular, all providers applied a subunit approach, often called towers or silos, in which all the service components were developed. The drive towards the delivery of standardized IT services prompts providers to adopt uniform organisational structures and tasks [32], [33]. However, we observed that the substantial independence among the subunits creates a loosely coupled system that hinders the integration of IT service components. Literature [34] reveals that the more an organisation is viewed as a set of loosely coupled units where joint actions rests on negotiations,  the more any strategy for implementation must emphasize the need to mobilize coalitions. Based on the case studies we recognized a lack of providers attention to the constraints of change resulting in an extension of the transition phase. This finding is consistent with literature [12] which argues that often obstacles are causes by the organisational structure of a firm.

### 4.3     Coordination of Labour

We observed that the co-ordination of labour is strongly dependent on the complexity of the providers' sourcing delivery model. To be specific, the more a provider applies a blended approach of its sourcing delivery model (e.g. onsite, onshore, offshore), the more the co-ordination of labour increases. For example, the development of a new insurance application for provider C affected the provider's resource management as they are geographically dispersed. As a result, the co-ordination of labour increased significantly. This change also affected the performance of the provider's IT services negatively. We assume that providers that act domestically (providers A and B) are more able to achieve unambiguous agreements to co-ordinate labour than providers

that act regionally or globally (providers C,D,E). However, we found that provider B acts as a main contractor towards the client while managing a subcontractor that is based in India. We observed that this engagement lacks unambiguous agreements, obstructing the co-ordination of labour significantly.

During the execution of the transition phase all providers struggled with the co-ordination of labour. We found evidence that after fierce discussions with their clients', the providers A, C and D were forced to initiate a client-oriented team that has a co-ordinating role including a decision-making responsibility. The exception to this approach is provider B and E that deploy separate roles to manage their outsourcing arrangement which are fully dispersed within their organisation. The interviewees perceive the positioning of a client-oriented team as essential to reduce the resistance as sourcing employees dedicated to the clients form a part of internal subunits. The providers under study were forced to mobilize an internal coalition to provide the necessary support for their clients. This finding is consistent with [29] who argues that loosely coupled subunits within an organisation strengthen the degree of pluralism and consequently increase the resistance to change. As the providers' departments historically were designed as internal subunits this is related to the mechanistic paradigm. The results, however, suggests a need for an organic way of working that enables an unstable, or even chaotic nature of the external environment.

Analysing the arrangement between the client and provider B, which is responsible for managing a subcontractor, we found a high degree of resistance as a result of ambiguous agreements between all parties. This can be explained as, in spite of the formal contract between the client and provider B, the informal relationship between the client and the subcontractor proved to be stronger. As a result, the client wants to deal with the subcontractor directly with respect to the coordination of labour (e.g. application development activities in India).

*'The subcontractor won't co-operate to integrate the various single services. Their motivation is clear: since there is no contract that mentions the coordination of labour to integrate IT services, they are also not paid. As we are not paid either, but still deliver an integral service this issue causes a lot of tension in the relationship to both the client and providers'. (Source: a delivery manager).*

Moreover, the client perceived a limited value of the main contractor as the main activities, which include the required resources for application development, are located in India. This resulted in tension between the main contractor and subcontractor resulting in an increased resistance to co-ordination between both organisations. This is consistent with previous research in which the authors argue that offshoring projects result in increased co-ordination [35]. Reflecting our findings to the resistance theory, we found that the main contractor representatives perceived resistance as a result of a loss of control and a fear of complexity. In contrast, the subcontractor representatives perceive a loss of comfort and an increased workload when indirectly supporting the client.

## 4.4     Alignment of IT processes

As the internal IT processes of clients and providers, like service requests and service fulfilment may differ, it is important to create alignment to ensure a sound delivery of IT services after the transition phase. This alignment comprises the entire chain from the client up to the provider's delivery subunits. Interviews showed that provider C designed and implemented procedures to guide the alignment of the client's and the provider's IT processes on both tactical and operational level. Analysing the concept of process alignment, our study shows that this concept has a strong impact on the perceived degree of resistance. Alignment between the client's processes and the provider's processes requires strong attention of the provider's management. In particular, when uncertainty at the client side increases, the degree of process alignment on the provider's side will decrease. This was found, for instance, at provider B, which at the beginning of the transition phase struggled to achieve process alignment. An explanation can be found in the complexity of the engagement. For example, provider B was supposed to implement the process alignment in the outsourcing arrangement through system integrator activities between the client onshore in The Netherlands and the offshore service provider in India. This type of arrangement increases the complexity significantly and results in resistance at management level. This finding is related to the mental model in that there is resistance to change and that the leadership should overcome it [12]. Strategies to overcome resistance involve participation, discussion sessions and negotiation to understand and reduce resistance from an holistic perspective [36], [37].

## 4.5     Effect of Resistance on the Transition Phase

Based on the results and analyses of the providers under study, the findings demonstrate that the organisational dimensions can be characterized as critical factors influencing the perceived degree of resistance. It appears that the mental model with regard to resistance at subunit level is significant and difficult to overcome. The need for unambiguous agreements is not only related to the client-provider relationship but also the providers' internal relationships between multiple decentralised subunits. We found evidence that the transition of clients' assets and/or staff were insufficiently translated into providers' initiatives to adapt their subunits. This resulted in multiple discussions between the clients and the providers about organisational structures, tasks and responsibilities. Furthermore, interviews with provider representatives revealed that the co-ordination of labour and corresponding IT processes increased substantially since formal agreements with clients' were ambiguous. We observed that the co-ordination of labour is strongly dependent on the complexity of the providers' sourcing delivery strategy. Consequently, completing the transition phase took more time. As mentioned earlier, we may assume that service providers that operates globally, while applying a blended sourcing delivery strategy, experience more difficulties in co-ordinating their labour, compared to domestically operating providers. However, we did not find evidence that underpins this basic assumption. In fact, both provider A and B, which operates domestically, were not able to meet the

expected transition period. Moreover, as additional time is required to co-ordinate the application of labour the transition phase will become longer. Since the providers have to develop integrated IT processes from the clients up to their internal delivery units, the required time is mainly affected by the coordination of labour. As a result of the providers' sourcing delivery model (e.g. onsite, onshore, offshore), the coordination of labour and the alignment of IT processes negatively influence the duration of the transition phase. Based on the findings of our research, we found a major distinction between the expected duration of the transition phase and the realised duration (see table 2). These findings answer our main research objective, studying the effects of service provider resistance to change on the duration of the transition phase.

**Table 2.** Overview of the transition period

| Provider case studies | Expected transition period | Realized transition period | Type of resistance to change |
|---|---|---|---|
| Provider A | 6 Months | 9 Months | Distribution of responsibility of organizational tasks<br>Work-related communication and coordination of labour<br>Process alignment |
| Provider B | 10 Months | 19 Months | Distribution of responsibility of organizational tasks<br>Work-related communication and coordination of labour<br>Process alignment |
| Provider C | 6 Months | 6 Months | Distribution of responsibility of organizational tasks |
| Provider D | 9 Months | 12 Months | Distribution of responsibility of organizational tasks<br>Work-related communication and coordination of labour<br>Process alignment |
| Provider E | 9 Months | 17 Months | Distribution of responsibility of organizational tasks<br>Work-related communication and coordination of labour<br>Process alignment |

## 4.6    Conceptual Research Model

In this Section we present the conceptual framework that emerges from the findings of our research on resistance to change in outsourcing arrangements. The unit of analysis in this research is the service provider organisation. The conceptual model, as depicted in figure 1, illustrates four interrelated constructs including its embedded organisational dimensions. The first dimension relates to the providers' internal organisational tasks. It needs to be designed based on an organic design approach in order to support an unambiguous client-provider arrangement. Secondly, the providers' internal co-ordination of labour need to be aligned to ensure the provisioning of IT services towards their clients in the vertical demand and supply relationship. Third, providers' have to develop and describe interrelated processes to support present and future clients' business needs. The conceptual research model illustrates the embedded organisational dimensions and their relationship with service providers perceived resistance. Consequently, the providers' perceived resistance may influence the overall transition realization period. The framework is applicable to

regular client–provider relationships. However, IT outsourcing add additional dimensions such as the context, the contract, and relationships, which increases the complexity. As mentioned earlier, the providers' perceived degree of resistance focuses on an organisational level.
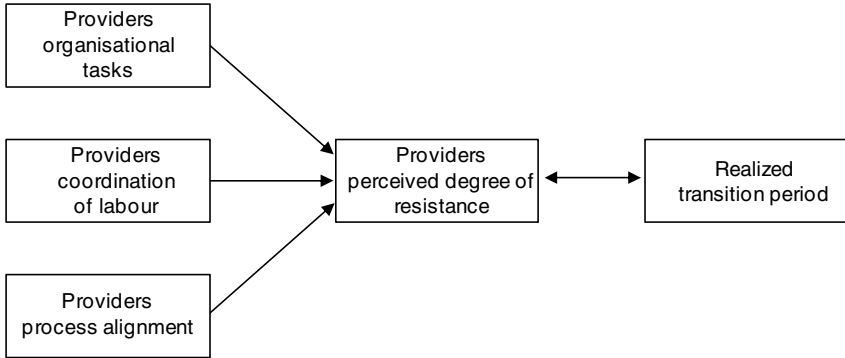


**Fig. 1.** Conceptual research framework

# 5    Conclusions, Limitations and Future Research

Resistance to change is an under-researched concept in sourcing literature and the aim of this research was to create a deeper qualitative understanding in the effects of service provider resistance to change on the duration of the transition phase. First, the findings suggest that all providers under study indeed experienced the transition phase as a struggle. Since the organisational structure of all providers is based on autonomous operating subunits, this demonstrates that resistance to change is bundled per subunit. As such, the process of change can be described as incremental [9] negatively influencing the period of the transition phase. Secondly, our findings illustrated that loss of control and loss of comfort are likely to be crucial for influencing the perceived degree of resistance per subunit. We argue that providers resort to slack resources in order to constitute a loosely coupled system that on the one hand is stable and on the other hand supports adaptive and incremental change [28],[ 32]. Finally, based on the case studies we determined how providers cope with organisational dimensions that influence organisational inertia. We may conclude that the providers' interaction with their environment affects the resistance to change. Providers struggle to manage tasks and responsibilities within their organisation, which emphasizes the need for intra-organisational relationship management. This is consistent with providers' leadership capability in establishing clear engagements [38].

This discussion has sought to assist both researchers and practitioners interested in the concept of resistance to change. Related to research these case studies shed some light on the under-researched transition phase of outsourcing arrangements. Since the topic of resistance to change from the perspective of service providers has been hardly researched, our research aims to contribute by partly filling this gap. Our research also aims to contribute to outsourcing practitioners. Most fundamentally, our research

demonstrates that providers need to develop strategies to overcome resistance. Providers have to implement these strategies to proactively govern their subunits and take appropriate measures for dealing with them. This might include education, participation and discussion. However, there are some limitations to this research. Obviously, factors other than we have identified contribute to the perceived degree of resistance and eventually to the realization of a transition period. Our findings suggest that the conceptual research model should be extended by including the sourcing delivery model and the degree of a providers adaptability capacity. Additionally, the research is based on only five case studies that were studied in-depth, which therefore limits the generalizability of the results. Although we studied multiple arrangements, we only focused on the provider side. We acknowledge this limitation and hope that this research may encourage other researchers to study the outsourcing arrangements more holistically.

The conceptual research model postulates that various dimensions affect the perceived degree of resistance and in turn influence the realization of a transition period. We want to encourage researchers to expand research in this field to provide more rigorous measurements that can be used to strengthen our first results. Furthermore, as identified in one of our case studies, we also would stimulate researchers to study the relationships between service providers as they are interdependent of each other. This may open new research areas as coordinating mechanisms between the providers are essential to perform towards their clients.

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# Cloud Sourcing:
# Implications for Managing the IT Function

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## 1    Introduction

Our research points to the considerable promise of Cloud [1][1], and the even bigger opportunity waiting to be grasped. However, this is all before us in a future still undetermined, despite confident predictions of very large revenues and business benefits from cloud technologies within 2-3 years. If '*the mark of a successful technology is that it vanishes*,' [2] then cloud computing has a long way to go. Not only has it been the most visible technology by far in the last three years, but this looks likely to continue for the next three. Leaders in industry and governments worldwide find themselves on the cusp of potential major deployment of these technologies but find themselves at a key **Stop, Think, Act** moment. In the face of business demands, technological developments and the maturing of external services, CIOs, in particular, need to be thinking about, and revisiting, what their technology organizations need to look like three to five years out. Managing cloud deployment on a project-to-project or six months-to six months basis, is not going to achieve technological integration, optimize cloud deployment, or deliver on the agenda businesses are setting for cloud. CIOs will be looking at their strategy, capabilities, operating model and ability to execute, how cloud fits with their existing technologies and organization, and its implications for *this* industry, and *this* business – because there is no single cloud, and it is going to be different for every organization. Ultimately it is management that will make the difference. And for management, there is a (very large) sting in the tail. In the face of the forthcoming data explosion, the problems organizations have always had with optimizing their use of information are just about to get much, much, more difficult. This brings to the fore the need for organizations, and their technology functions, to resist the old compulsion to merely straightjacket the data explosion with superior technology, and instead rethink themselves as digital businesses, and address the importance of business analytics for guiding strategic action and operations [3].

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[1] Cloud benefits we point to are: speed, payment based on consumption,  lower costs, clearly defined services managed to appropriate services levels, on demand availability and scalability, simplicity (complexity hidden from view), allowing a focus on business requirements and strategy and innovation with the business,  away from day to day maintenance and technology issues.

This forward vision will seems ambitious. But it actually represents a convergence whose emerging shape we have been tracking through a range of research studies stretching back to commercial development of the internet from the mid 1990s [4][2]. How can this world can be managed into existence? What retained capabilities will be needed to run the technology function? What specific management capability challenges and worry-points are coming to the fore with cloud deployment? How can the technology function, and business readiness, be evolved to leverage cloud, the technology platform and applications for business advantage? These are the questions our research in this paper sets out to answer.

## 2    The Research Base

Our research has drawn on three main sources – an interview base, industry and academic reports, the LSE Outsourcing Unit 1,600 organization database, and a large-scale survey. We undertook thirty five initial interviews with leading industry players across the cloud supply chain. These were added to during 2011, following the same procedures outlined below. By late 2011 we had interviewed 56 providers of cloud infrastructures and services, system integrators, analysts, and users of cloud services. In terms of roles, we spoke to CEOs, CIOs, marketing and operational managers, strategists, consultants, analysts and service directors. Interviews were normally undertaken by one person and were held over the phone. They typically lasted at least one hour, with some running to over two hours.

Each interview was then transcribed and the transcripts shared amongst the research team. Each interview was then coded by one member of the team. Initially codes were used to simply classify each element ("quotations") of the interview. For example, some parts of the interviews related to "hybrid clouds" others to "lock–in" or "pay–as–you–drink models". As the interviews were being coded, a parallel process of consolidation took place.

The first step towards consolidating codes into analytically distinct segments that can be examined together both within and between interviews involved tidying up the initial codes, for example by combining codes that covered the same concept but were labeled slightly differently. For example, codes initially labeled as "pay–as–you drink" and "pay–per–drink" models were merged. This process of analysis was also based on, and contrasted with, themes from the cloud and outsourcing literatures [5]. The process involved an iterative reading, coding and cycling through the codes. The validity of the coding and analysis was constantly checked by searching for counter examples and nuances in the text and codes.The resulting codes and associated quotations were then shared with the remainder of the project team. This resulted in further insights and themes to explore. Finally, a selection of the coded quotations was selected for presentation in the current paper [6]. The selection process was guided by the need for a

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[2]    Our research in 2000-2002 documented developments in application services provision which was, in retrospect,   the prototype for the emerging cloud landscape, but at the time lacked the further necessary developments and convergence in technology, large-scale supplier investment and multiple large client take-up.

coherent narrative flow in the paper. In addition to reviewing the academic literature and associated industry reports, a distinctive feature of the work reported is the inclusion of results from a large–scale survey of IT industry practitioners. The survey was undertaken by HfS Research [7] in conjunction with the LSE Outsourcing Unit. HfS Research is the foremost research analyst firm and social–networking community that is focused on helping enterprises make complex decisions with their global sourcing strategies. It has 120,000 monthly visitors and 37,000 subscribers and leverages this community of sourcing professionals to deliver rapid insights on the global sourcing industry. The survey ran between October and November 2010. Many of the key results from the survey are presented in this Cloud and The Future of Business report. Other views on the data and, an updated survey for October 2011, are available on the HfS site [8]. The survey was conducted online and disseminated across a broad number of networks and media to collect a random sample of 1. business (non-IT), 2. IT executives' and 3. technology vendors, advisors/consultants and service providers of Cloud-based services. The survey was sent in a number of outgoing emails and was also available live on a number of popular websites and blogs. Three separate question sets were developed that were tailored to these three groupings. Each question set was completed via a 12-minute web-based questionnaire. IP addresses were collected to ensure duplicate responses were deleted. Networks were spread across multiple technology blogs and media, largely ZDNet blogs, Global Services Media, Shared Services & Outsourcing Network and the HfS Research subscriber-base (accounting for 75% of respondents). 1035 responses were collected, 214 from IT executives, 414 from business executives 407 from Technology vendors, advisors/consultants and service providers of cloud-based services.

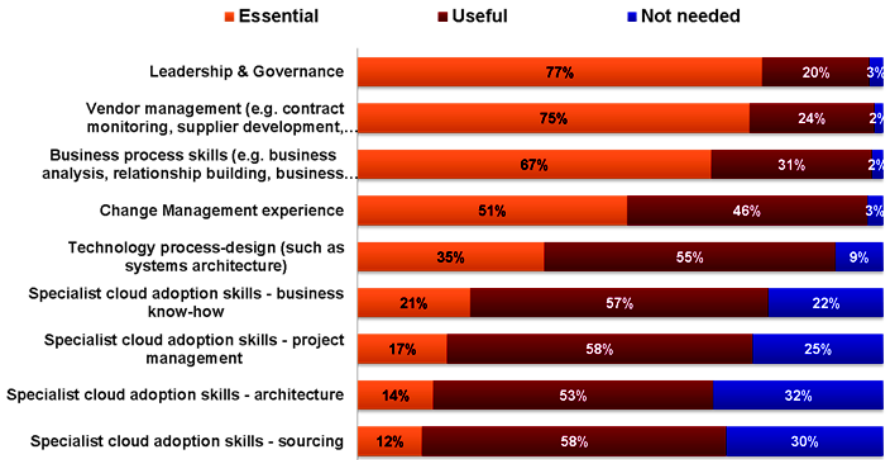## 3     Cloud: From Expectations to the Art of the Possible

Business executive expectations on in-house IT staff to deliver on cloud are high. Our survey found 80% looking to rely on in-house staff. But business executives also expect much more use of external services for supporting the move to cloud with 40-50% surveyed recognising benefits for governance support, business process transformation, change management and communications and IT maintenance and support. IT executives also emphasise external assistance with mainly technical issues - IT configuration and integration, data security, data management and governance[3]. The overall message is: the IT function cannot do it by itself. However, there is widespread recognition that it needs to retain key capabilities. Our recent outsourcing survey gives adviser insights into what these need to be, though their perceptions underrate the role of cloud skills because many customers were not yet making significant moves into cloud (see Figure 1). At the same time our, and other, research shows many CIOs and IT functions lacking the adequate knowledge to move decisively into cloud computing.[9] In practice we found this to be one major reason for organizational delays in moving to cloud.

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[3]   Horses for Sources and LSE Outsourcing Unit survey of cloud computing November 2010.

In your view, how important is it for your clients to have the following inhouse skills/capabilities for managing outsourcing relationships?
(Outsourcing advisers)

■ Essential    ■ Useful    ■ Not needed

| | Essential | Useful | Not needed |
|---|---|---|---|
| Leadership & Governance | 77% | 20% | 3% |
| Vendor management (e.g. contract monitoring, supplier development,… | 75% | 24% | 2% |
| Business process skills (e.g. business analysis, relationship building, business… | 67% | 31% | 2% |
| Change Management experience | 51% | 46% | 3% |
| Technology process-design (such as systems architecture) | 35% | 55% | 9% |
| Specialist cloud adoption skills - business know-how | 21% | 57% | 22% |
| Specialist cloud adoption skills - project management | 17% | 58% | 25% |
| Specialist cloud adoption skills - architecture | 14% | 53% | 32% |
| Specialist cloud adoption skills - sourcing | 12% | 58% | 30% |

Source: HfS Research and the London School of Economics Outsourcing Unit, July 2011
Sample: 318 outsourcing advisers and 544 outsourcing suppliers

**Fig. 1.** Management of Outsourcing Relationships

In fact, for internal IT, Cloud signals significant changes in functions and roles. The IT function has been on a journey for two decades from being a back-office technical function to a service-oriented provider that delivers business value operationally, and that is managed by business and technology leaders as a strategic business resource. A much touted purpose of outsourcing, and now of cloud, has been to accelerate this process, freeing up internal capability to become more business focused and strategic in contribution[4]. This conclusion is reached through reviewing our ongoing research in four streams. This suggest four converging journeys that technology leaders need to pursue if the potential endpoints, in terms of management capability to deliver and run an integrated technology-with-cloud platform, is to be realised.

Our work on the evolution of the IT function (stream 1) establishes that the IT shop needs to evolve from a competent technical service, through acting as strategic partner with the business, to a small high performance management team organized into retained core capabilities. By then the CIO role will split, with the CIO being more business/big data/innovation focused and the CTO being more architecture and service focused. However, technology cannot be leveraged strategically and for business innovation without a) senior executives and business units being fully engaged in funding, and playing pro-active roles in designing, developing and deploying these

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[4]    See Willcocks, L. Cullen, S. And Craig, A. (2011) *The Outsourcing Enterprise: From Cost Management to Colllaborative Innovation* (Palgrave, London) for  the most recent  detailed account of this history, and a description of the retained core capabilities needed by clients to run IT and back-office functions.

Developments 2011-16

Management changes by 2016

**Stream 1- Evolution of the IT Function**
Willcocks and Craig 2009
Reynolds Willcocks Feeny MISQE 2008
Willcocks Cullen Craig 2011

• **CIO as Business Innovator**
• **Chief Technology Officer**
•**Strong middle tech-cloud management**

**Stream 2 -Evolution of Outsourcing**
Lacity and Willcocks 1998, 2001, 2006, 2009....
Willcocks Cullen Craig Lacity 2005, 2006, 2007, 2008, 2011.

•**Business senior execs. pulled in as outsourcing comes closer to core**
•**Tech-cloud leaders focused on collaborative innovation**

**Stream 3 - Moving To The Cloud**
Seddon, Reynolds Willcocks 2009, 2010, 2011
Venters, Whitley Willcocks 2011
Lacity and Willcocks, 2012

•**Tech-cloud management develops as 'business savvy sourcing architects on steroids'**

**Stream 4 -Towards the Ambidextrous Organization**
Willcocks and Craig 2009
Seddon, Reynolds Willcocks, 2011
Venters, Whitley Willcocks 2011

•*Organizational* **tech-cloud capabilities needed**
•**Organizational architect critical**
•**Technology group leads on flexible tech-cloud architecture and consumerization of service**

**Fig. 2.** Cloud and Management: History of the Future[5]

technologies and b) IT achieving a step-change in its outsourcing maturity towards collaborative innovation with suppliers (stream 2). Cloud developments (stream 3) fit this context by bringing new technological capabilities and related challenges and opportunities (see our previous papers) that will, as this final paper demonstrates, require major shifts in internal management, skills and capabilities.[10, 11] But for cloud technologies to be fully exploited for business advantage, the rest of the business will also need to develop new organizational IT and organizational architecture capabilities. These will fit with the technology architecture, strategy and operations becoming increasingly imbedded in business practices, the convergence (stream 4) founding the ambidextrous, more digitally-based business [12].

If this forward vision is at all salient, then it can be seen that the IT function, and its host organization becomes highly reliant on internal capabilities, as well as external service providers. The rest of the paper looks at what these retained capabilities can be, and how they can be evolved.

## 4     Cloud Management and Core Capabilities: The Foundations

In the face of turbulent technologies, we consistently find that an emphasis on technology and technology-related skills guarantees adoption **but rarely exploitation**.

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5   This research is distilled in several recent publications.  See Lacity, M. and Willcocks, L. (2009*) Information Systems and Outsourcing: Studies in Theory and Practice.* (Palgrave, London; Willcocks, L., Cullen, S. And Craig, A. (2011) The *Outsourcing Enterprise: From Cost Management to Collaborative Innovation* Palgrave, London; Willcocks and Lacity, M. (2012) *The New Outsourcing Landscape: From IT to Cloud Services*. Palgrave, London; Lacity, M. And Willcocks, L. (2012) *Advanced Outsourcing Practice: Rethinking ITO, BPO and Cloud Services*. Palgrave, London.

There is a danger of a lot of cloud offerings being, so far, technology solutions in search of business problems. To get cloud on to a more strategic agenda and identify the relatively few applications that produce disproportionate business value, the Technology function needs to shift from its traditional skills, roles and values[6]. In practice, with each technology cycle, with cloud being but the latest, and with ever increasing usage of the external services market[7], our work demonstrates that high performing Technology functions are   managed by a relatively small internal team of highly capable, demand-led and primarily strategy- and business-focused people. Here we focus on the Technology function, whose role is central to cloud deployment, but the same logic applies to, for example, human resource, finance and accounting, procurement, and administrative functions).[8] The model provides a strong foundation for managing existing technologies, and remains robust in the light of our present findings on cloud services; throughout we elaborate where it needs new emphases and more granularity. The internal group responsible for the technology platform and applications, including cloud, needs to deliver on four core tasks:

- **governance,** including leadership, organization and coordination. This involves aligning dynamically the Technology function's activities internally, and with those of the organization as a whole.
- **eliciting and delivering on business requirements.** A demand-driven task concerned with defining the systems, information and processes to be provided, and how they can be leveraged for business purpose.

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[6]  We use the terminology of 'technology function' rather than the more normal' IT function' to capture the convergence of technologies taking place, the development of cloud computing, and the role of   technologists in the increasing digitisation of business.  The function's  role is shifting, reflected in the changing   status of  the CIO. This, we are finding,   does not stand for 'career is over' (perhaps 'concept is over'?) but the work is changing, with possible a division going to occur into those who keep the current technology base optimal – the chief technology officer, and those who focus on strategy, business, information and innovation. Already   in our model the informed buying capability has been developing to relieve the CIO of responsibilities on managing the external supply side.

[7]  In our latest survey of 347 buyers across industry sectors between 64-80% of buyers said they were going to increase their outsourcing moderately or significantly in the next year. Survey by LSE Outsourcing Unit and Horses For Sources, July 2011 see
www.horsesforsources.com/research-services and
www.outsourcingunit.org

[8]  In this paper we focus on management of the technology function which is central to cloud deployment. However, the retained capabilities model we detail  model also applies, with minor adjustments,   to  IT and cloud -enabled business back-office and other  functions such as human resources, procurement, accounting and finance, and  sales. The supporting case research appears in Willcocks, L. and Lacity, M. (2006) *Global Sourcing  of Business and IT Services* (Palgrave, London) chapters 3, 6, 7, 8. See also Lacity, M. Willcocks, L. (2011) Business Process Outsourcing Studies: A Critical Review and Future Research Directions. *Journal of Information Technology*, 26, 4, 1-38. The original core capabilities model was formulated by Feeny, D. and Willcocks, L. (1998) Core IS Capabilities for Exploiting IT. *Sloan Management Review*, 39, 3, 9-21.

- **ensuring technical capability.** A supply-focused task about defining the blueprint or architecture of the technical platform used over time to support the target systems and processes, and dealing with risks inherent in non-routine technical issues.
- **managing external supply.** This concerns arriving at and managing sourcing strategy. It requires understanding of the external services market, and the ability to select, engage and manage internal and external technology/cloud resources and services over time.
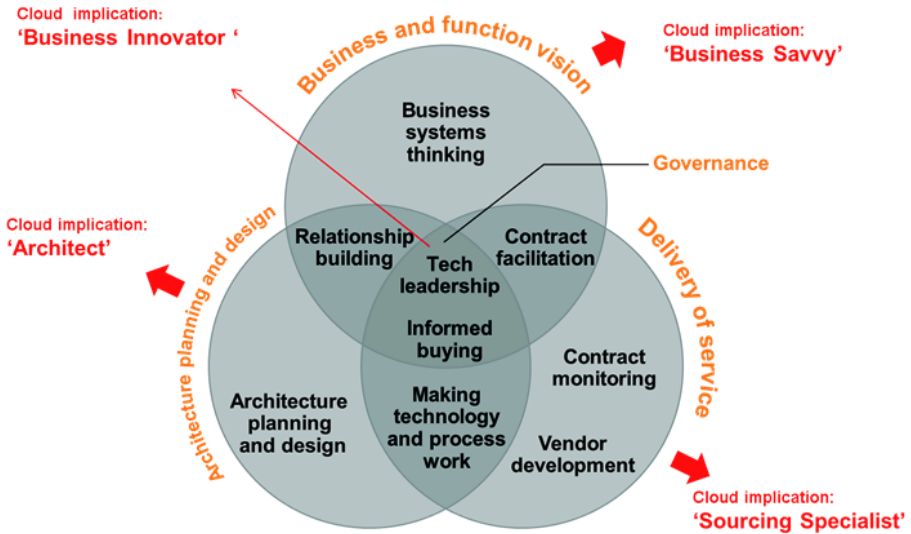


**Fig. 3.** Core Capabilities for High Performing Technology and Back-Office Functions

## 4.1     Governance

This task is delivered through Leadership and, for supply governance, Informed Buying capabilities (see below). The central **Leadership** task is to devise and engage in organizational arrangements – governance, structures, processes and staffing - that successfully manage internal and business interdependencies, in ways that ensure the Technology function delivers business value for money. The key role of the leader is also to look for value shifts, listen to the technology, and see where business value in the (cloud) technology is migrating to [13]. The CIO, as leader, will also be responsible for setting up the organisation for cloud:

*'There is a demand management component which includes the business requirement definition; there is the business case component – does it fit the architecture, is it strategically where we want to go, does it fit our financial model; then there is delivery – generic programme management, methodologies that give you more*

*agility; there is the integration management component, faster, more dynamic procurement, service management - and finally the skilled people to deliver all this.'*[9]

The CIO also oversees the evolution of the technology function, and is likely itself to develop with cloud, splitting into two - a more business focused, 'business innovator' job, and a more technical 'chief technology officer' type role. Parallel research into innovation has found that the *Business Innovator* role in the in-house function is key to moving any external sourcing agenda in the direction of the collaborative innovation with business - but also eventually suppliers - needed to leverage the full business potential of cloud[14]. One CIO suggested how his role may develop with cloud: *'For the CIO information is going to be more important, and becoming more intimately familiar with business processes.... indeed running some of the back office stuff. The business visionary is a potential evolution... it will vary by industry and company.'*[10]

## 4.2    Business and Function Vision

In leading practice organizations we have been studying, **Business Systems Thinkers** from the technology function are important contributors to teams charged with business problem solving, process re-engineering, strategic development and delivering e-business. Such organizations recognise that business processes should be redesigned in the light of technology, including cloud, potential. Business systems thinkers focus obsessively on aligning strategy, structure, people, process and technology. In earlier research we have found many examples of failing projects and disappointing outsourcing arrangements where such skills were not present. The danger with cloud is that organizations fail to learn from such experiences imbedded in the technology history of almost all large organizations[15]. In cloud research we are finding that business systems thinkers need to be on cloud projects, and act as conduits between business demands and the technical architects.

The **Relationship Builder** is an integrating, operational role, facilitating the wider dialogue, and establishing understanding, trust and cooperation amongst business users and technology/cloud specialists. Relationship builders develop users' understanding of technology and cloud and its potential for their lines of business. They help users and specialists to work together, help to identify business requirements, ensure user ownership and build user satisfaction with technology and cloud services. With cloud comes a further emphasis in this role on business analysis and requirement identification:

*'The one role that has got the most to gain out of cloud inside the customer organization is the business analyst, with a technical appreciation'*. Tim Barker, SalesForce.[11]

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[9]  Interview  with Matthew Coates in discussion with Andrew  and John Hindle Accenture September 16th 2011.

[10] Frank Modruson, CIO Accenture. Interviewed in July 2011.

[11] Interview with Tim Barker of SalesForce, November 2010.

All our respondents stressed that cloud both requires more business facing skills, that is *'Business Savvy'* than ever before, but, as in the case of the relationship builder role, also meant the release of human resources from more mundane technical work to fulfil vital business-facing activities.

## 4.3    Architecture Planning and Design

The principal challenge to the **Architect Planner/Designer** is, through insight into technology, suppliers and business directions, to anticipate technology trends so that the organization is consistently able to operate from an effective and efficient technology platform – without major investments into major migration efforts. Planners shape the technology architecture and infrastructure through developing the vision of an appropriate technical platform, and through formulating associated policies that ensure necessary integration and flexibility in technology and cloud services. Any outsourcing arrangement provides a strong test of the value of retaining this capability.[12] When it comes to cloud, our respondents suggest that the 'Architect' capability is key. The cloud architect has to be an enterprise architect, SOA architect (most clouds use services architecture) and cloud technologist, the new role emphasis being to increasingly collaborate with business initiatives. David Linthicum of Microsoft describes it well:

*'The cloud architect needs to be an expert in the existing cloud computing technology: public private and hybrid, including IaaS, PaaS and SaaS. You can't build something unless you understand the tools and materials that are available, and the same goes for bringing cloud computing technology into the enterprise to form (business) solutions.'* [16]

According to one senior practitioner:

*'I have worked on cloud based systems for years now and the common thread to cloud architecture is that there no common threads to cloud architecture. The complexities around multitenancy resource sharing and management, security and even version control lead cloud computing start-ups – and enterprises that build private and public clouds down some rough roads before they start to learn from their mistakes. In the world of cloud computing that means those who are smart, creative and resourceful seem to win out over those who are just smart'.*[17]

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[12] We saw a bank and a manufacturer give away their architects, assuming that the task of architecture planning was technical and therefore one for the suppliers. Three years into outsourcing found each of them rebuilding this capability, because they could not understand, let alone talk with and influence the suppliers about, how to address existing and fresh demand through a new technology platform with better economics. See Willcocks, L. and Lacity, M. (2012) *The New IT Outsourcing Landscape: From Innovation to Cloud Services.* Palgrave, London, chapter 7.

For Frank Modruson, CIO of Accenture:

*'The client person who can think about the enterprise data model, how all the technology and data fits together, can conceptualise, plan and implement, these are the skills going forward –more conceptual, knowledgeable and architectural. And data modelling, a sort of lost art – with cloud it's back'.*

Hong Chiong of Microsoft points to in-house capability needed in architecture planning and design on security and compliance:

*'When it comes to compliance and security, technology managed by the cloud supplier is only one fourth of the solution. You have to have a standard operating procedure that is well-documented and that people are trained to operate. That has got to come from the customer.'*[13]

By listening to the technology, understanding the business and its technical configuration, the technical architect ties together cloud strategy, its links with existing technology, and develops the coherent blueprint for the migration path.

Operating in the overlap between the challenges of IT architecture design and delivery of IT services is the core capability of Making IT and Process Work. **Technology "Fixers"** are needed to troubleshoot problems and identify how to address business needs which cannot be satisfied properly by standard technical approaches. They understand the idiosyncracies of the inherited infrastructure and business applications, enabling them to make rapid technical progress – by one means or another. In outsourced environments they also assess and challenge third party suppliers' claims about technical problems and proposed solutions. Technical staff will need not only a deeper understanding of their traditional core competencies but also a wider skill set to transcend the traditional IT silos and address the fact that cloud encompasses more than one technology. Senior Executives suggested to us, for example, that instead of employing three people who oversee storage, networking and virtualization environments, companies might hire one person whose skills span all three cloud competencies. For CIO Frank Modruson, with cloud:

*'The traditional operational roles will shrink in number, move increasingly to the supplier and cover more scale. What you call technical fixing, there will always be a need for a bit of that, for example dealing with the joins between different provider services and technologies, having know-how of in-house systems.'*[14]

While IaaS, and Saas require some new skills, moving to PaaS products require much tighter integration with software development and application lifecycle management to

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[13] Interview with Hong Chiong of Microsoft, October 2010.

[14] Interview with Frank Modruson, CIO of Accenture, July 2011. He gave the example of Accenture's own recruitment and selection process. Accenture is highly reliant on talent, but the   secret sauce is who you attract, select, and hire, and this is not imbedded in the technology and software. As a result the organization has been on a software as a service centre for recruiting for six years.

realise maximum benefits. IT departments have to redesign application with PaaS in mind and the deployment model is largely driven by how the service provider offers its service. PaaS will almost certainly require the greater level of retraining and the skills. And technical fixing also has to take on a more business focused mindset than before. As one PaaS supplier commented:

*'Clients need to be willing to configure the network and design applications in a different way, perhaps use different size servers, and not just see cloud from a technical point of view, but get the balance right on how much it costs me to re-engineer versus the benefits and costs savings from a cloud solution... and often its the business benefit in terms of elasticity and time to market, not cost savings that are the driving factors.'*[15]

Stephanie Lester of Glasshouse told us:

*'The cloud model of rent and virtualization, means that you will still need technical expertise, especially about your own systems and cloud 'fit' but, so far as technical 'doing' work migrates to the supplier, or becomes automated, you will need less headcount in this area.'*

## 4.4    Delivery of Services

The fourth competency comprises the capabilities required to manage and ensure external supply. In an organization that has decided to outsource most of its technology services, the **Informed Buyer** role is the most prominent after the CIO. Informed buyers analyse and benchmark regularly the external market for IT and cloud services; select the 5-10 year sourcing strategy to meet business needs and technology issues; and lead the tendering, contracting, and service management processes. Informed buying also requires an intimate knowledge of suppliers, their strategies, financial strength, and their capabilities and incapabilities in different sectors, services and regions.

Cloud requires many changes to traditional procurement. Matthew Coates of Accenture points to one reason:

'My whole way of procuring needs to change because the whole idea of cloud is things are going to be agile.'[16]

Cloud also requires the ability to source different technologies and services from a multi-supplier base, on a more dynamic, frequently pay-for-use and pay-as-you-go basis, as well as on more traditional outsourcing contracts, and shaping multiple service integration for the business unit customer. In a world that gets increasingly outsourced and cloudsourced, we are finding that client organizations still under-resource their informed buying capability, when in practice to fulfil this *'Sourcing Specialist'* role, what they need is informed buying on steroids, together with three other capabilities.

The **Contract Facilitator** is crucial for lubricating the relationship between supplier(s) and the business users, not least by ensuring that problems and conflicts are seen to be resolved fairly and promptly within what are usually long term relationships. It is an action-orientated capability. Interestingly, the need for this role is rarely spotted

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[15] Interview with Neil Thomas, Cable and Wireless, September 16th 2011.
[16] Interview September 16th 2011, op. cit.

straight away when outsourcing. Instead, the capability tends to grow in response to on-going issues for which it emerges as an adequate response, such as:

- Users may demand too much and incur excessive charges
- The business user asks for 'one-stop' shopping
- The supplier demands it
- Multiple supplier services need coordinating
- Easier monitoring of usage and services is required

In the cloud context, internal product management by contract facilitators construct services from third party offerings. They also front differences in ways of operating brought in by cloud. Neil Thomas of Cable and Wireless offers one example:

*'We have debates with customers where they insist on a mutually agreed time for planned outages. Normally that's what you do on a dedicated platform, but in a shared platform, if no customers mutually agree you never end up being allowed an outage, or there is a high overhead... that's an example of where we and the customer have had to learn with us.. Those people you describe as contract facilitators also worry about security and faults, because it's a shared platform, also billing systems.*[17]

**Contract Monitoring** involves making inputs into the development and maintenance of a robust contract as the basis for a sound governance framework.  The role then leads on to holding suppliers to account against both existing service contracts and the developing performance standards of the services market. Not all potential issues and expectations can be identified at the onset of a relationship, and the contract will be subject to differing interpretations as issues arise. Moreover there is no standard contract, only standard headings, as each outsourcing and cloud arrangement has its own set of issues and dynamics. While all organizations we have studied recognised the importance of contract monitoring, and staffed it at the beginning of their deals, historically, they all too frequently put the wrong people in place, especially in the large deals, underestimating the dynamic nature and extent of the task. Cloud, we are finding, brings a new dynamism to the role – more, and more diverse contracts, more instant and transparent information, including from suppliers, faster response times demanded, new standards of service, and the need to deal with the immaturity of contracting in the cloud eco-system.

The **Vendor Developer** is concerned with leveraging the long term potential for suppliers to add value, creating the 'win-win' situations in which the supplier increases its revenues by providing services that increase business benefits. Given the prohibitive size of switching costs historically, it has been in the client company's interest to maximize the contribution from existing suppliers. It still remains so for cloud deals, especially where, as we anticipate, these deals get larger and more complex. In the context of multiple suppliers, Poston et al. (2009) also identify the importance of the vendor developer role. Not properly managing the vendor set can lead to sub-optimal outcomes, such as loss of technology and process knowledge, lack of innovation, over-spending,

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[17]  Interview with Neil Thomas, Cable and Wireless, September 16th 2011.

and poor quality [18].[18] It is also important to guard against what we call 'mid-contract sag,' in cloud and other arrangements, where the supplier delivers to the contract, but only to the letter. As one aerospace IT service director describes it [15]:

*'Yes the supplier can achieve all the things that were proposed – but where is the famous 'value-added service'? We are not getting anything over and above what any old outsourcer could provide.'*

While such a concern might not be present in the initial smaller cloud deals, as these grow in complexity, there is every reason for a client to have this in-house capability, not least to service its existing non-cloud outsourcing contracts.

## 5     Client Retained Capabilities: New Skills, New Challenges

In Table 1 we bring together these capabilities, expressed as roles and skills. The nine roles all demand high performers who can develop into a high performance team. In contrast to the more traditional skills found in IT functions, there needs to be a much greater emphasis on **business skills and business orientation** in nearly all roles. While the exceptions used to be the 'technical fixer', and to some extent the 'technical architect' roles, we have found these two roles needing an increasing amount of business understanding and relationship building. There is a significantly increased requirement for **'soft' skills** across all roles, and this is accelerated by cloud, the exception being the 'contract monitor' role. The major shift is toward fewer personnel, but of very high quality. We are seeing cloud accelerating these developments. On **technical skills** the shift in-house, again accelerated by cloud, has been towards less 'doing,' more conceptual technical activity.

The mix of business, technical and interpersonal skills will vary by role. Looking at the Technology function, the Informed Buyer needs strong communication and negotiation skills, strong knowledge of the outsourcing market, and high business skills but only medium knowledge of technologies. The Technical Fixer, on the other hand will have very high technical skills and good knowledge of business systems but, unlike every other role, needs only medium interpersonal skills. The Relationship Builder, on the other hand will need high interpersonal skills, medium knowledge of the business and high technical skills. Each capability needs to be fulfilled by a distinctive mix of technical, business and interpersonal skills, and needs high performers who can work as a coordinated team across the capabilities. Cloud brings new challenges to each of these roles. Table 1 points to further skills and problem-solving capabilities needing to be developed for each where cloud deployment begins to figure significantly.

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[18] These authors draw lessons from how one multinational organization managed its Vendor Set in the outsourcing of software development and testing activities. They conclude that client managers who outsource to vendors need to establish the appropriate balance between building strong collaborative relationships and encouraging market competition among a set of three or more vendors to ensure best price and service quality.

**Table 1.** Nine Core Back – Office Capabilities as Roles

| Manager Role | New Cloud Challenge/ Time Horizon | Time Horizon | Description | Skills profile |
|---|---|---|---|---|
| Leader | Cloud staffing Cloud business strategy Technology function redesign Cloud project oversight | *Present / Future* | Integrates the technology–cloud effort with business purpose and activity | Business–high Interpersonal–high Technical–medium |
| Business Systems Thinker | Cloud fit and timing Business–cloud projects Relationships with business execs. | *Future* | Ensures that technology–cloud capabilities are envisioned in every business process | Business–high Interpersonal–medium Technical–medium |
| Relationship Builder | Cloud operational business leverage Business education | *Present* | Gets the business constructively engaged in operational technology–cloud issues | Business–medium Interpersonal–high Technical–high |
| Architecture Planner and Designer | Cloud strategy Technology–business alignment Systems integration Cloud project planning New security/data issues | *Future* | Creates the coherent blueprint for a technical platform that responds to present and future needs | Business–low/medium Interpersonal–medium Technical–high |
| Technical Fixer | Apposite Iaas, Saas, Paas skills Broader technical skills base 'Fixing' role in cloud projects | *Present* | Rapidly trouble–shoots problems which are being disowned by others across the technical supply chain | Business–low Interpersonal–low/ medium Technical–high |

**Table 1.** (*Continued*)

| Informed Buyer | Cloud market knowledge Matching business demand with cloud supply Cloud supplier management | *Present / Future* | Manages the technology–cloud sourcing strategy to meet the needs of the business | Business–high Interpersonal–high Technical–medium |
|---|---|---|---|---|
| Contract Facilitator | Cloud service development and integration Cloud product manager Service delivery | *Present* | Ensures the success of existing contracts for external technology–cloud services | Business–medium Interpersonal–high Technical–medium |
| Contract Monitor | Cloud SLAs Regulatory implications Cloud security issues | *Present / Future* | Protects the business's contractual position present and future | Business–medium Interpersonal–medium Technical–medium |
| Vendor Developer | Developing cloud suppliers Maturing cloud relationships Securing future innovation and value added from cloud deployment | *Future* | Identifies the potential added value from technology–cloud service suppliers | Business–high Interpersonal–medium/high Technical–medium |

## 6    Cloud: Emerging Management Challenges

The shifts in the operating model we are anticipating poses five significant challenges needing to be addressed for progress to be made.

### 6.1    The Human Resource Challenge

In practice, recruitment and retention of the small high quality group we have described has always been a major human resource challenge. Cloud has just made it that much harder - cloud skills were running at a 20-40% premium throughout 2011 - and the skills shortage may well slow client organizations in their ability to adopt cloud technologies, especially where they also have to compete with suppliers. Two solutions are upskilling and hiring. As one multinational oil company executive commented:

*'You've got to be able to upskill your organization and to have a human resource policy which provides such training to people in your organization.'* The logistics manager at a major retailer said:*'To be honest, we had to recruit a few people'.* Once hired, you will need to:

- pay them at a level within striking distance of that provided by alternative employers;
- provide them consistently with the level of challenge they look for in the job;
- develop for them a career path.

We have already been seeing hybrid staff being developed in-house. For example, Xerox, Dupont, WW Grainger, and Johnson &Johnson offer job rotation paths and flexible career paths to retain their core people. Cloud adds further reasons for this.

## 6.2    The 'Change-in-Ethos' Challenge

The issues with more traditional IT functions, and the character of Cloud as a disruptive innovation is caught in the following observation by Jim Rivera of Saleforce.com[19]:

*IT has been largely responsible for keeping systems up and running and the statistics are anywhere from 60% to 80% of what they focus on is really geared towards just keeping the lights on, keeping things going, and not on adding more business value. The problem is that the business changes quickly, they have their demands, and IT just simply cannot get the stuff. Of course there needs to be strong governance to make sure what people are doing is consistent in terms of architecture and security, and that people are not getting into the types of business critical systems that only IT should be touching. However, IT doesn't have to do everything anymore. With Cloud, IT can get out of the way of the business, be no longer a roadblock for certain types of systems, which the business can handle with oversight from IT*

Other providers talked of needing to be much sharper on service metrics and transparency, corrective action enable by automation . Speed also requires much greater operational readiness is needed with cloud, and this passes over to client staff, not least because of internal pressure from business units to perform faster[20].

*When it comes to cloud we are discovering that all the internal roles have to be faster acting than before. And while organizations have speeded up, they have not necessarily come up to the speed of cloud, which is instant- well almost. You have to automate the bureaucracy. Change management, for example, we used to have weekly meetings. With cloud, fast tracking is almost your everyday. And that means you need to have a robust system that makes assessments and changes really quickly. It means changes in how knowledge and processes are set up, teaming and shared knowledge*

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[19]  Interview with Jim Rivera of SalesForce, October 2010.
[20]  Interviews with Kevin Lees of VMWare, November 2010 and Jim Spooner, Glasshouse, November 2010.

*enabled by automation. On the big picture this is IT coming up to speed on service with other areas and sectors, as it should do[21].'*

These changes present new opportunities for IT professionals, if they are only willing to take them:

*'The Cloud, whether it be private, public, hybrid, is creating positive opportunities for IT professionals. I say to my IT people: you are going to have many more business conversations. You're going to be having more service catalogue conversations, you're talking about solutions, you're not talking about applications and stacks and the things that have traditionally been the IT lingua franca. If you are a systems administrator and you're looking at converged infrastructure today, systems, storage, network and security people will be calling at your door. Cloud requires a breadth of skills. Or you can become a Cloud architect or specialize as a Cloud professional. Alternatively, if you want to specialize, for example as a systems person, opportunities continue because now you have to go deeper into the skill set from a technology point of view and you're no longer provisioning for one application stack, you're provisioning for the Enterprise or for the Cloud. So whether you want to go into the business side of things or you want to do go deeper in technology or you want to go wider with technology, Cloud brings you some incredible new opportunities as an IT professional.' Sanjay Merchandini, EMC[22]*

## 6.3    The Project Management Challenge

Project management needs to be an ***organizational*** core capability, and not the preserve of one business function, therefore it does not appear explicitly in Figure 3. Candidates for the project manager role are most likely to be found amongst relationship builders and technology fixers but clearly business systems thinkers, leaders, architects, and informed buyers must have very active roles in projects with a strong technology/cloud component. As one BH Billiton senior executive told us: *we outsourced too much project management capability in our first deal, and even if you have somebody doing projects for you, you can never give up project sponsorship, ownership and accountability[19].'* In practice we have seen the technology function rebuild some of its project management capability in the face of large-scale outsourcing, especially where IT-enabled business transformation was on the agenda. Large business projects dependent on cloud components will need the same hyper-active involvement of the 'Technology' roles outlined above, as well as supplier resources, but also the business

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[21] Quote by Stephanie Lester of Glasshouse, interviewed in September 2011.

[22] Interview with Sanjay Mirchandini, EMC, December, 2010. Chuck Hollis , Chief Technology Officer of EMC, elaborates on this  by suggesting three  relatively new roles: cloud architects, process re-engineers and business enablers. The other key cloud related roles include cloud service managers, cloud capacity planners, cloud infrastructure administrators, cloud security architects, and cloud governance, risk and compliance managers. Our own model embraces these roles, using a different vocabulary, and assumes a higher degree of cloud outsourcing than at EMC.

needs to show maturity in allocating business sponsors, champions and full time business user managers to the project team, and take responsibility for outcomes.

However, cloud may well have to start small and quick at first, and this may well accelerate an already existing trend towards prototyping, agile and fast delivery of business benefits. According to Tim Barker of SaleForce[23]:

*'In terms of process skill, agile development, scrum methodology – the kinds of things that IT organizations are already moving towards – I see cloud computing putting this on a fast track.'*

With cloud, the lines between development, testing and deployment are likely to blur even more. Mathew Coates of Accenture, indeed, sees agile development and centres of excellence as natural start-points for cloud initiatives within the technology function. On this view, in-house learning on cloud would occur on a series of small '80/20' projects (focusing on the 20% of the system/service that give 80% of the benefits) with quick business 'wins'. This would build, over time, into a strong in-house cloud knowledge and cloud 'fixing' capabilities. If this is so, and our research supports the viability of this agile development model [12, 20], then it means a shift in the ways of working not just for technology staff, but also for business managers and operational staff.

## 6.4    The Innovation Challenge

The Technology function model we have detailed is designed to deal with dynamic business contexts and is, amongst its other tasks, designed for innovating. If leaders, business systems thinkers and architects looks after future business innovations and their technical underpinnings, the informed buyer and vendor developer innovates in relationships and what can be got from the external services market, while technical fixers, relationship builders and contract facilitators achieve micro-innovations in operational issues However, organizations still need to make major shifts if they are to harness major innovations from technology/cloud service suppliers. Our own work shows that four fundamental practices underpin effective collaborative innovation, and the deeper the collaboration the more organizations can deliver not just IT operational, but also business process and strategic innovations [21].

**Leading** shapes and conditions – in fact sets up - the collaborative ethos and environment. Business and technology leaders signal through commitments, incentives, risk mitigation, the joint exploitation of opportunities. These need to be imbedded in forms of **contracting** that specify how risks and rewards provide incentives for innovation, collaboration, and high performance to achieve common goals. **A**t the same time **organizing** for innovation requires more co-managed governance structures and greater multifunctional team working across the collaborating organizations. Technical work requiring the application of existing specialist know-how, and techniques can be outsourced relatively safely, assuming competent specialists can be hired. But as more work becomes "adaptive," [22] – as

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[23] Interview with Tim Barker, October 2010.

reflected in moves to agile cloud development mentioned above - more multiple stakeholders need to be engaged with defining the problem and working together on arriving at and implementing a solution. Team working now requires the ability to collaborate within a client organization, between client and supplier and between suppliers in multi-supplier environments. Organizing for collaboration also means assigning responsibility for delivering results. These three shifts in leading, contracting and organizing enables collective delivery of high performance, innovation and superior business outcomes. But **performance** is only possible where high personal, competence-based and motivational trust has been generated amongst the parties. High trust is a key element and shaper of successful collaboration, which requires the client-supplier relationship to be open, based on learning, adaptive, flexible and interdependent. Performing as trusted partners is a key component for collaborative innovation. Although studies have noted that there is no such thing as instant trust in outsourcing, it can be built over time through demonstrable performance.

## 6.5     The 'Evolution-With-Cloud' Challenge

Technology functions have been evolving over the last two decades, and Figure 4 captures the phases they tend to go through.[23] After an initial period of uncontrolled, and increasingly costly and dysfunctional IT proliferation (e.g. no synergies or economies of scale), a 'delivery' phase of developing internal capability and control ensues. At this stage the IT executive needs to focus on building the reality of technical and service competence, while ensuring that business managers get a correct perception of improvements in IT performance. Building IT know-how and capability is vital during this stage. Particularly important here are contract facilitation, architectural planning and technical fixing capabilities. Given the learning needed, and the lack of skills in managing external suppliers, buying-in of external resources as needed is the better sourcing approach. With the delivery phase accomplished and providing a reliable platform, a 'reorientation' phase sees the business units needing to become more pro-active in leveraging technology strategically for business purpose, while the technology staff need to become more business-focussed. The CIO, with the help of senior business executives, will need to provide active leadership to achieve these objectives. Relationship building, business systems thinking, and contract monitoring need particular attention and development in this phase. The lack of internal capability to manage large-scale outsourcing points to incremental use of the external IT (and cloud) services market). With 'delivery' and 'reorientation' accomplished, the organization can then embark on 'reorganization'. With IT and business closely aligned, and business managers mature in their ability to fulfil their roles in leveraging IT for strategic purpose, including on innovation and change projects, many IT roles can be devolved to the business units. Meanwhile the IT function can complete its move to a high performing core capabilities model. Large-scale outsourcing (and cloud sourcing) becomes much less risky, and the strategic payoffs more likely.
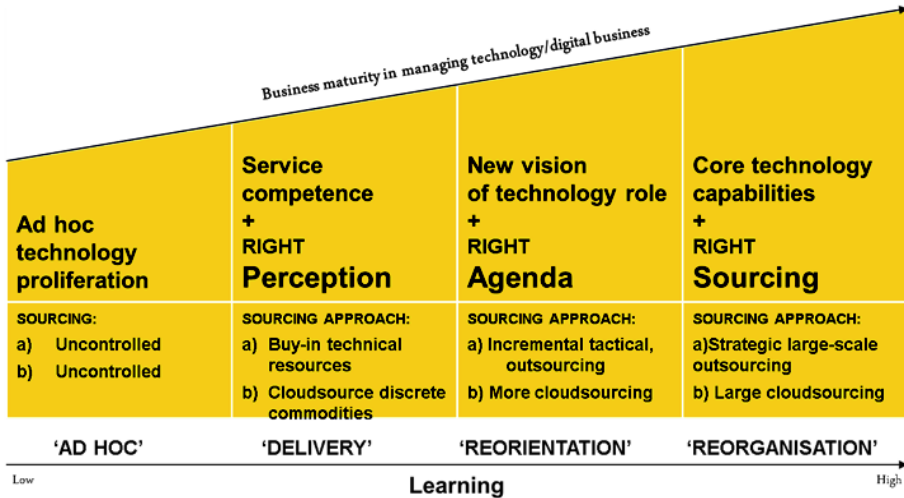
**Fig. 4.** Evolution of Technology Function

This phase model provides good **Stop, Think Act** ammunition because it has several large implications for cloud, and cloud supplier, adoption. As we have seen with ITO and BPO, a maturing ability with one type of service (ITO) rarely translates into the same level of competence with another, however similar (BPO). There is also the issue of the relative maturity of suppliers to deliver the specific technology and service. Figure 4 suggests managers need to pinpoint their maturity as a technology function and business, and then read their cloudsourcing capability into the phase model. We find that, with a few exceptions, in-house will be early to middle in the delivery phase. If so, they need to revisit building in-house capability over the three phases, but this time specifically for cloud. This begins with building service competence for cloud. This is where the centres of excellence concept fits:

*'The centres of excellence idea is that you pull in from across your IT organization the skilled individuals and give them some slack and scale to deliver whatever you need in cloud..... then that will grow and then you will start to think strategically about how your IT organization is going to change, and how governance needs to change in your business and IT organization.'* Matthew Coates, Accenture.

At the delivery stage, it is viable to outsource to the cloud 'discrete commodities' – and indeed the media is full of such examples. But cloud learning is key so buying-in resources from suppliers and consulting firms to work on issues and projects the internal group manages is an important capability building process. Our research suggests that the massive pressure from the business to deliver on cloud's potential should be resisted, until both the technology function and business units are well into the cloud re-orientation phase. The maximum business potential from Cloud is realized when internal cloud capabilities map on to the re-organization phase. At that stage the CIO is likely to be a business innovator, with the role of Chief Technology Officer or Architect being enhanced to manage the strategic technical capability of the

organization. CIO Sanjay Mirchandani gives insight into this evolution process from an internal EMC perspective:

   *' The business pressure on a CIO today is not can this be done; it's how fast we can we get this done. The compression in expectation is phenomenal.... I think most companies of our size will go through similar stages, the low-hanging fruit, the stuff IT owns, R&D, QA systems, test systems, and then you move into mission critical business, critical business supporting systems and then you can get more ambitious and say, okay, how can I provide most of the stuff in a self-service model, remembering that the bulk of the users in a hi-tech company like EMC are technical.   Plus or minus, I think this is the journey that most companies will take*[24].

## 7    Conclusion

Against the building momentum on Cloud we heard many practitioner voices sounding cautionary notes. For example:

   *'Large organisations are not going to speedily move their IT estate to software as a service solutions because they have so much legacy background. And in supply chain and customer facing organizations their IT systems have become very complicated, highly automated and close knit together... you cannot just grab a bit of it and put it out to the cloud'.*[25]

   *'Very few things are going to be 100% cloud. Like any wave of computing , it doesn't replace the others, it goes on top'.* Fraser Kyne, technology specialist, Citrix [24].

One CIO, Frank Modruson, suggested consumers will move faster to the newer technologies, followed by SMEs: *'For large organizations we'll talk about it for a while longer, then it will show up faster than we realise... not completely, not exactly the way we might anticipate, and with some inertia..'*[26]
   But whatever the emerging pattern of take-up and speed, Cloud represents a potential crossing point. Technology has been, and continues to be a huge burden on organizations. Our research across these five papers found time and again that it just takes a huge amount of effort to make the thing work. Technology has, to a considerable extent, blinded people to what the real purpose of the Technology function was. The more technology gets moved out of the way – into the cloud, and/or supplier, the more the technology function can focus upon the real job which is how to exploit for business purpose the capability that the technologies happen to make available. Primarily, this will lie in service, information, management, business

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[24] Interview with Sanjay Mirchandani, CIO of EMC, December 2010.

[25] Interview with Neil Thomas, Cable and Wireless, September, 2011.

[26] Interview with Frank Modruson, CIO of Accenture, July 2011. In very large organizations, he saw email, infrastructure and stand alone or isolated systems moving to the cloud quite quickly, the more deeply integrated systems such as ERP moving on a much longer time-frame because of complex requirements and difficulties in finding Cloud providers operating at the right scale.

analytics, IT enabled business innovation and digital business. In this paper we have provided a road map of management guidelines for this journey, which, our research suggests, is feasible, and would be enormously wasteful to miss.

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# Coordination as a Service
# to Enable Agile Business Networks

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**Abstract.** This paper surveys the current organizational requirements of agile business networks and then studies how emerging ICT are addressing the needs. The paper concludes that while several requirements are covered by novel cloud and Saas offerings, several requirements related to service coordination, collaboration, risk management and relation management are not properly addressed by ICT offerings yet. The paper proposes coordination as a service (CAAS) to fill this gap and outlines the key characteristics of CAAS.

**Keywords:** Agile business network**,** Agile Supply chain, Software as a Service, Cloud Computing, Global Coordination, Micro Sourcing, Coordination as a Service.

## 1      Introduction

In today's uncertain global environment business agility is needed that extends beyond organizational boundaries. Networks in which businesses operate also need to be agile. An agile business network is able to respond to largely unpredictable changes rapidly with ease [1]. This requires both the organizations in the network and their horizontal and vertical connections to their business partners to be highly adaptable.

While agile business networks have been described in several conceptual studies, the lack of suitable ICT support has been a key hindrance to their success in practice. Traditional ICT support for connecting the nodes in business networks has been limited to (often cumbersome) static horizontal and vertical integration of enterprise systems. The IT links established are usually limited to coordination and control at the operational level in the context of fixed collaboration patterns.

Over the last few years, several promising technologies have emerged that may enable micro sourcing of services to create agile business networks. Service Oriented Architectures (SOA) have started to open up previously unreachable functionality of

legacy systems within the enterprise. SOA allows enterprises to renew their ICT infrastructure and applications into a more open, adaptable and scalable architecture. Moreover, the emerging stack of cloud technologies (Infrastructure as a Service IAAS, Platform as a Service PAAS, and Software as a Service SAAS) allows enterprises to radically or gradually adopt a flexible service sourcing model. Services required by the business are acquired based on a pay-per-use rental model. Through flexible contracts services may be sourced quickly and swopped dynamically.

As these developments are maturing, one could assume that the road is now paved for business networks to use these technologies to apply agile practices such as micro-sourcing services on a global scale. However, large scale successful examples are scarce. It appears that more is needed than the rich set of technologies currently available on the market. In this paper we propose that an additional concept; Coordination as a Service (CAAS); is needed to allow business networks to make use of these opportunities. CAAS providers have to do more than just integrating and coordinating internal and external services. They should encapsulate both organizational and technical complexity of service sourcing and integration. In this paper we will explain the need for CAAS and define CAAS and its various aspects. The paper is structured as follows: We first survey the key organizational and technological developments that. Next, we explain the need for CAAS and define important CAAS characteristics. We conclude by presenting conclusions and future research.

## 2    Towards Agile Business Networks

### 2.1    Agile Business Networks

More than a decade ago, Abbe Mowshowitz [2] noted that both organizations and technology are moving towards virtual models. He also stressed that these trends are interconnected. Virtual organization is a concept that applies to technological infrastructures as well as businesses. Mowshowitz describes virtual organization as "as a set of principles for metamanaging goal-oriented activity based on a categorical split between task requirements and their satisfiers". Requests from customers to an organization will usually vary greatly over time. Similarly, due to e.g. market conditions, the set of available services dynamically changes. As a result "the process of assigning services to requests must itself be dynamic". In a virtual organization, a management process is needed that effectively finds and matches services (both technological and organizational) to meet the requirements of the request. This finding and matching process is inherently dynamic and iterative. Based on requirements such as availability of the resource, price, speed or other quality attributes a flexible set of services is contracted. Interestingly, Mowshowitz [2] refers to this type of 'metamanagement' as the successor to traditional outsourcing.

Switching and combining services to fulfill requests is a core part of achieving flexibility. Effective management of this finding, matching and switching process requires clear service requirements, clear management goals and obviously clearly specified resource services. These can be available within the organization or external to the organization. In the latter case contracting the service is required. Such invocation of an external service can be viewed as a form of dynamic sourcing.

These ideas are in line with the concept of business network agility. The need for such agility was first recognized in manufacturing networks: ''Agility is the successful exploration of competitive bases (speed, flexibility, innovation pro-activity, quality, and profitability) through the integration of reconfigurable resources, and best practices in a knowledge-rich environment to provide customer-driven products and services in a fast-changing market environment [3]''.

Similarly, agility of business networks is recognized as a necessity to thrive competitive in global markets. Agile business networks are driven by customer demand and routinely have access to a worldwide production system to deliver customer configured products and services [4]. In general, inter-organizational relationships require careful governance. A comprehensive set of joint processes and practices is needed to achieve a successful sourcing relationship (for an overview see e.g. [5]). We focus here on capabilities that are key to achieving agility. Several key capabilities of agile business networks have been described in literature:

*Modularization of Services, Product, Process* – Products and Services offered and the business processes supporting these have a modular structure. Such a modular structure enables effective sourcing [6]. Quality of the modules can be precisely specified and assessed. Pricing schemes allow for price comparisons [7].

*Coordination and Collaboration Capability* - These are clearly key in agile business networks. As defined by Thomson [8], coordination comprises the protocols, tasks and decision-making mechanisms designed to achieve concerted actions between interdependent units. As outlined by Dekker [9], both formal and informal control mechanisms can be applied to coordinate the inter-organizational relationship (see Table 1).

*Quick Connect Capability* - support integration and quick-connect and quick-disconnect capabilities to external partners. These include searching, contracting, monitoring and enacting services. Such capabilities are needed from the business contract level to the technical infrastructure level [4][10][11];

*Relationship Management Capability*– In agile networks, there is little time to build subjective loyalty between network partners. Therefore, according to Mowshowitz [2] there is only room for "objective loyalty that is based on reasoned self-interest". Trust cannot be based on long term relationships and past performance either. Therefore agile business networks need to find alternative mechanisms to ensure trust and loyalty. Aziz et al. [12] point out that capabilities such as high quality and formal communications between partners, adaptation of processes, and conflict resolution to higher performance in an inter-organisational relationship.

*Risk Management Capability*– The dynamically formed reciprocal relationships in agile business networks often do not have a stable history. Both at an organizational and technical level building networked relationships are high risk activities [13]. At both technical and organizational levels semantic misunderstandings easily occur. The lack of high quality semantic standards in many industries increases this risk [14].

**Table 1.** Formal and informal control mechanisms, source [9]

| Outcome control | Behavior control | Social control |
|---|---|---|
| *Ex-ante mechanisms* | | |
| Goal setting: | Structural specifications | Partner selection |
| Incentive systems/reward structures | -Planning | Trust (goodwill/capability): |
| | -Procedures | -Interaction |
| | -Rules and regulations | -Reputation |
| | | -Social networks |
| *Ex-post mechanisms* | | |
| Performance monitoring and rewarding | Behavior monitoring and rewarding | Trust building: |
| | | Risk taking |
| | | Joint decision making and problem solving |
| | | Partner development |

In the next section we evaluate how information systems technology has supported building these key capabilities.

## 2.2    Emerging ICT Support for Agile Business Networks

Already in 1966, Felix Kaufman published an article in Harvard Business Review that called for experiments with ICT that would cross organizational boundaries [15]. However, studies have shown that decades later ICT may be both an enabler as well as a disabler to agile business networks.

Enterprise Systems Integration projects may take years and huge investments to complete. Connecting legacy and ERP systems of various partners is technically highly complex. The resulting "hard-wired" links often do not enable agile business networks that allow business partners to quickly connect their business processes.

Numerous authors have investigated this issue. For example, a Delphi study by Akkermans et al. [16] revealed that the following key limitations of ERP systems in providing effective SCM support emerge as: "(1) their insufficient extended enterprise functionality in crossing organizational boundaries; (2) their inflexibility to ever-changing supply chain needs, (3) their lack of functionality beyond managing transactions, and (4) their closed and non-modular system architecture".

In a more recent Delphi panel Daniel and White [17] investigate the potential of improved support of inter-organizational linkages by emerging ICT. Their findings suggest that "ERP systems may be reaching a structural limit concerning their capabilities and adjunct technologies will be required to integrate multiple inter-organisational operations". These include a combination of electronic hubs, web services, widespread adoption of common enterprise resource planning (ERP) systems and enterprise portals.

Van Hillegersberg et al. [18] develop a typical virtual organization scenario using webservices and conclude that the technology provides clear benefits: "Webservices will truly allow straightforward B2B integration using standard and low-cost internet technology. This is a major advantage in enabling business networks, as small

companies within these networks usually do not have the knowledge, time and money to implement traditional and complex.

Enterprise Integration technologies…network orchestration could be designed mostly separately from the various systems available in the business network". However, the authors also stress that the orchestration technologies may have scalability and security issues. Furthermore, to truly design a collaborative and intelligent network integration, contracting and collaboration tools are required as well.

**Table 2.** Seven viewpoints of Services as proposed by Allen [19]

| Viewpoint | Description |
|---|---|
| 1. Transparence: | ▪ Smoothness of the customer's experience in using the service, includes consistency of information. |
| 2. Customer fit: | ▪ Using core competencies to provide customers with excellent products and experiences, <br> ▪ Tailoring offerings to customers' needs. |
| 3. Partner connectivity: | ▪ Using third parties to perform commodity services. <br> ▪ Offering service(s) to different partners to streamline a business process, improve business relationships or to generate revenue. |
| 4. Adaptation: | ▪ Gracefully adapt the process to changes in the marketplace |
| 5. Multi-channel capability: | ▪ Supporting the customer end-to-end through the process, using different channels to achieve continuity <br> ▪ Ability to offer the same service through different channels |
| 6. Optimization: | ▪ Offering services in real time at high performance levels |
| 7. One-stop experience: | ▪ Catering to different needs of the customer through one set of services, typically offered through one channel at one time, often via portals. |

Based on webservice technologies a services paradigm has emerged that promises to better fulfill the need of agile business networks. The services paradigm entitles the transformation of enterprises into modular structures of processes, systems and infrastructure that support the delivery of services. "A service is functionality that must be specified in the business context and in terms of contracts between the provider of that functionality and its consumers. Implementation details should not be revealed" [19]. An ICT architecture that support this services view is referred to as a Service Oriented Architecture (SOA). Allen [19] gives seven viewpoints of a services approach (see Table 2).

While the services paradigm clearly appeals to organizational needs of agile business networks the transformation to a services paradigm and SOA turned out to be a long and winding road for many organizations. For example, Maule and Lewis [20] report on some lessons learned from complex field experimentation with several large scale SOA initiatives over the past 5 years at the US Department of Navy: "the high number of industry participants, and different types of information technologies [many rather unique], mean that transitions can be especially difficult. There are vested interests in legacy systems. SOA requires open architecture; however, it is in closed and proprietary systems that profit is maximized, variables controlled, competitive advantage maintained.". They further state that: New pricing models are required, new ways of assessing risk. This new environment requires new strategies-- which have largely not yet emerged. Service-based operations require new day-today operating procedures".

The Software as a Service (SAAS) concept emerged to address some of these issues. SaaS is an on-demand software deployment model where an application is hosted as a service, provided to customers over the Internet. While various definitions of SAAS exist, SAAS typically adds the following elements to the Services/SOA paradigm:

- Hosted: SaaS is a software distribution model in which applications are delivered, maintained and upgraded (i.e., hosted) by a vendor/service provider;
- Network based delivery: Services are delivered to customers over a network, typically the Internet;
- Pay-per-use: SaaS is a subscription-based service model;
- Multi-tenant: A SaaS application typically has a multi-tenant architecture;
- Customization through configuration: A SaaS application is typically configurable, but not customizable.

Many of these core properties of SAAS appeal to businesses active in an agile business network. Benefits that SAAS should bring include focus more on core competencies, access to required technical expertise, system implementation time is shorter with SaaS, more flexible array of payment methods [21]. Cloud computing has tremendously supported the feasibility of the SAAS concept. The virtualization of infrastructures and platforms has enabled SAAS providers to efficiently acquire and scale the resources they need.

Vaquero et al. [22] present the following cloud definitions based on a review of the literature: "Clouds are a large pool of easily usable and accessible virtualized resources (such as hardware, development platforms and/or services). These resources can be dynamically re-configured to adjust to a variable load scale), allowing also for an optimum resource utilization. This pool of resources is typically exploited by a pay-per-use model in which guarantees are offered by the Infrastructure Provider by means of customized SLAs". They distinguish three scenarios where clouds are used: SAAS, Platform as a Service (PAAS) and Infrastructure as a Service (IAAS). In the IAAS scenario, the infrastructure provider, through virtualization, assigns and dynamically resizes these resources to build ad-hoc systems as demanded by their

customers. In the PAAS scenario, instead of supplying a virtualized infrastructure, the providers delivers the software platform where systems run on. Clearly, SAAS providers are often customers of PAAS or IAAS providers.

As enterprises are putting higher priority on agility and joining business networks, the technologies described above have entered the top-ranked priorities of CIO's. Luftman and Zadeh [23] in their recent survey among global organizaitons find that the top-five influential technologies are business intelligence, cloud computing, enterprise resource planning, Software as a Service/Platform as a Service, and collaborative tools.
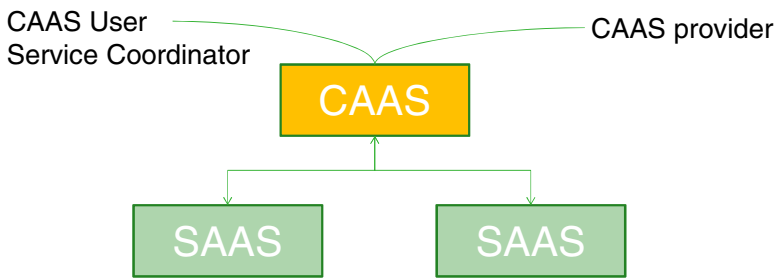
## 3     Coordination as a Service

In the ultimate agile business network, service providers and consumers can be dynamically added and removed from a business network in short time. Services can be configured on the fly to add value to the network. Service providers are sourced from a global pool of potential providers. Vastly agile business networks have the ability to cost effectively contract service providers to deliver specialized services for a single project or order. Sourcing is not only based on price, but on various quality and risk attributes as well. Moreover, global versus local considerations are included in the selection of each service provider. The selection, contracting and execution of such relationships can be referred to as micro-sourcing.

In section 2, both organizational requirements for agile business networks and current and emerging ICT support for these requirements were described. Table 3 combines the two perspectives. As can be seen in the table, services and cloud computing address some of the requirements but not all. While specialized service providers can use current Software as a Service offerings to develop, configure and publicize their service on a global market place, the dynamic location and integration of these services still requires extensive and time consuming integration. Quick connect capabilities are thus supported only for single SAAS tenants. Whenever a combination of services need to be orchestrated or a portfolio of services needs to be managed services need to be integrated. Coordination and Collaboration, Quick Connect, Relationship and Risk management are not sufficiently covered by the emerging ICT offerings yet.

**Table 3.** Connecting agile network requirements and available ICT support

| Agile Business Network Required Capability | ICT support |
|---|---|
| Modularization of Services, Product, Process | Services, Soa, Saas, Paas, Iaas |
| Coordination and Collaboration Capability | Orchestration languages, tools and Collaboration technologies |
| Quick connect capability | Webservices Integration and Semantic Standards, SAAS |
| Relationship Management Capability | Service Quality Attributes and SLA |
| Risk Management Capability | Monitoring tools, Performance management tools |

We therefore propose a fourth layer to be added to the "as a service" stack: Coordination as a Service (CAAS) (Figure 1). Coordination as a Service is a set of coordination services that can be rented from the cloud for the purpose of achieving agile service integration. The CAAS provider offers a platform that support Coordination and Collaboration, i.e. capabilities to search and compare services, orchestrate services in using various intelligent and pre-configured scenario's. In addition to structured collaboration the CAAS platform also offers "soft" collaboration for service contract negotiation and  price agreements. Relationship management capabilities are supported by the definition and monitoring of joint performance indicators and goals. The CAAS also offers conflict resolution capabilities. Risk management tools and monitoring tools are supported to assess and mitigate risks in the relationship.



**Fig. 1.** Coordination as a service (CAAS)

We envisage Specialized Coordination as a Service providers that will offer various combinations of technical and organizational support to aid businesses in creating cost effective and dynamic integrations. These CAAS will be not have any physical assets but entirely focus on the described capabilities. The business models of CAAS providers could vary, but also follow a pay per use format. Strategies of CAAS providers are also likely to vary following either an operational excellence model (coordinate services efficiently), customer intimacy (coordinate services in close contact with the customer providing optimal service) or an innovative strategy (lead in using advanced coordination technologies).

## 4    Early Developments

In The Netherlands we identified several cases of emerging projects which hint at the realization of the above introduced concept of Coordination-as-a-Service. We would like to discuss two in particular.

Hubways is the first example. Hubways is an initiative from FloraHolland, its members (growers) and parties involved in the trade and transportation of flowers from, to, and between the (Dutch) flower auctions. Hubways, started off as a project to analyze the potential of creating a more intelligent transportation process for flowers that are transported between the six auctions of FloraHolland. Being the

largest flowerauction in the world, the inter auction flows accumulate up to a volume which keeps over 400 trucks busy every day. Outcome of the first phase of the project: the observation that a serious amount of trips and therewith number of trucks utilized could be reduced by better coordinating transportation. Designing and developing a (software based) coordination platform became focus in the second phase of the project. Currently, the project is in its third phase in which the software is put in place and first try outs get scheduled. Important design foci were and still are:

- Quick connect and disconnect of business partners
- Event driven architecture (sense and respond)
- Learning from the past (real-time data analysis / pattern recognition)
- Largely autonomous environment, which can run with limited amount of human intervention

Important to mention is that Hubways specifically aims at the establishment of a wider applicable reusable system, which could be applied outside the specific scope of inter-auction physical transport streams as the consortium beliefs that coordination is a need in many inter-organizational networks.

Business network coordination has been a topic of interest within the fields of logistics and supply chain management for decades. Operating at the intersection of science and practice, Dutch Logistics Topinstitute Dinalog positioned the so-called 4C – which stands for Cross Chain Control Centre – centrally in its research agenda. A series of research projects was initiated to establish 4Cs, either physical ("an overall supply chain cockpit") or fully virtual. One of the companies collaborating with Dinalog is Tri-Vizor, a University of Antwerp spin-off firm. which develops a software platform to enable a minimally manned control center. Tri-Vizor aims at supply chain orchestration at both the strategical, tactical as well as operational level across multiple supply chains for its customers. Their software and processes focus on:

- Quick connect and disconnect of partners (and entire supply chains)
- Strategic analysis and sourcing processes get follow up by tactical monitoring and operational real-time control – all in one environment, accessible via their Cross Supply Chain Cockpit
- Active SLA monitoring (of contracts)

A first implementation of their processes and tools is done for two collaborating pharmaceutical firms, eachother's direct competitors: Baxter and UCB. Tri-Vizor is very actively extending its services and looking for new cross chain orchestration opportunities.

Both examples are still under development, and still have to prove their real market value. Nevertheless, they underwrite our thesis that Coordination-as-a-Service is a new domain with potential.

# 5    Conclusions and dicussion

In this paper we address the emerging trend of agile business networks. While these networks have received increasing attention in literature their large scale implementation is hindered by the lack of proper ICT support. To investigate how emerging ICT addresses the need of agile business networks we explain the characteristics of such networks based on the literature. We find that ICT today offers many paradigms and technologies to support the creation of agile business networks. Where traditional legacy and ERP systems fell short, SOA, cloud based technologies and services are more and more meeting the organizational requirements. However, the comparison of requirements and ICT offerings reveals that coordination and collaboration capabilities, quick connect of multiple services and relationship and risk management capabilities lack ICT support in a 'as a service" model. We introduce Coordination as a Service to address this need.

In future research the aspects of CAAS will be described in more detail and early examples will be surveyed. Case studies and design studies will be conducted to investigate how CAAS in combination with the growing SAAS market can support successful agile business networks.

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# Seeking Opaque Indifference in Offshore BPO

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**Abstract.** Business Process Outsourcing (BPO) is the delegation of one or more business processes to an external service provider (an offshore captive centre or a third party). The focus of most BPO research has been the cost reductions delivered by third party providers of BPO services in offshore locations in India, Eastern Europe and elsewhere. There has been little research on captive centres or the satisfaction of the end customer. This paper introduces the concept of "opaque indifference" which is OBPO delivered in a manner where the end customer is either unaware of or indifferent to the location of the service. It is important to the end customer in the OBPO environment and has a significant relationship with trust in the provider and the technology infrastructure. The overall research goal is to investigate the factors that support opaque indifference in OBPO.

**Keywords:** Business Process Outsourcing, Offshoring, Trust, Opaque Indifference.

## 1 Introduction

In Business Process Outsourcing (BPO), a firm delegates one or more business processes to be managed and delivered by an external service provider (which may be an offshore subsidiary or a "captive centre") [15][33]. The global scale of the BPO phenomenon is large and forecast to grow strongly. The global BPO market is estimated at $250 billion in 2010, with the Offshore BPO (OBPO) services component estimated at $38 billion, and in the same period OBPO delivered by service providers in India (both captives and third-party suppliers) is estimated at $15-16 billion [6][17]. Competition on the basis of superior customer service is increasing in industries that are at the forefront of offshore services outsourcing, such as banking and financial services, telecommunications, airlines, healthcare and logistics [16].

A differentiating characteristic of BPO is the extent to which BPO service providers interact directly with the BPO clients' customers and suppliers [33]. BPO service provider personnel must interpret the needs of their clients' customers and deliver effective customer service. In OBPO, the challenge of delivering effective customer service may increase due to geographical and time zone distance, and differences in culture, language or accent, and legal systems [2][33].

It is therefore surprising that there appears to be little published research on the capabilities required to manage OBPO outcomes that enhance customer service

outcomes. Research in OBPO has primarily been from the BPO client perspective, less frequently focussed on the BPO service provider and just occasionally on the dyadic relationship between BPO client and service provider. The authors have not been able to locate any published research in OBPO that focuses on the experience of an end customer of the BPO client. Further, this lack of focus on the satisfaction of the end customer exists despite anecdotal evidence of increasing complaints by end customers about difficult accents and poor service. Some companies are bringing offshored services back onshore and explicitly advertising the fact that these services are now being dealt with onshore.

There has been some research which focuses on the role of call centre workers and western customers [28] which emphasises the cultural divides and tensions in the service provider–end customer relationship and the pressures these conflicts place on staff and efficiency. Organisations seek to minimise these hostile perceptions by employing strategies such as modifying staff accents, scripting conversations, and providing staff with westernised names and cultural training.

In this context, we aim to introduce the concept of "opaque indifference" which is OBPO delivered in a manner where the end customer is either unaware of, or indifferent to, the location of the service. It is important to the end customer in the OBPO environment and has a significant relationship with trust in the provider and the technology infrastructure. When the OBPO service is delivered by a captive this relationship may be closer than when delivered by a third party organisation where the control and trust may not be as strong. The overall research goal is to investigate the factors that support opaque indifference where the BPO is delivered by a captive centre.

This paper is organised as follows. First, the literature review addresses types of BPO engagement models, OBPO success, trust and risk, and opaque indifference. Second, a model is presented to help explain the relationship between these concepts. Third, the case studies are described and discussed. Finally, conclusions are drawn and suggestions for future work are presented.

## 2     Literature Review

Providing excellent customer service is recognised as a critical business requirement, but not necessarily a primary objective for OBPO where cost reduction has been a major business driver. Issues that impact end customer service and satisfaction in this environment include classification of BPO activities, types of BPO engagement models, definition of OBPO success and the role of trust in achieving that success.

### 2.1     Classification of BPO Activities

It may be relatively easy to establish opaque indifference for back office transaction services (e.g. activation of a new credit card) where there is little customer contact and embedded knowledge is easily codified and transferred to the OBPO agent handling the transaction. However, it is more difficult to establish opaque indifference

when there is a high degree of contact with customers requiring BPO agents to be empathetic and facile with respect to the end customers' language and culture [37].

The literature on OBPO presents several classifications for the types of BPO activities. One form of BPO classification considers the extent to which business processes are core (i.e. key to firm success and strategic in nature), critical and non-critical [22]. Adopting the vendor's perspective, Niranjan et al. [18] propose a BPO taxonomy based on the dimensions of "criticality" and "complexity". However, this approach tends to lead to protracted debate about the differences between core, critical and commodity processes [1].

An alternative approach involves classifying BPO activities according to whether the task is unscripted and/or requires domain knowledge; for example Raman [23] proposes a "ladder" classification of BPO activities which appears to be highly specific to business context. This paper argues that a BPO classification framework based on how much knowledge is embedded in the work and how much contact offshore service providers have with customers [37] offers superior insight into the BPO critical success factor of opaque indifference.

## 2.2 Types of BPO Engagement Models

Organisations seeking to engage in OBPO can select from a variety of ownership and business relationship structures [22]. Lacity et al. [12] have identified nine commonly used engagement models that match type of work with supplier capabilities. Penter et al. [21] identified four engagement models by controlling for the type of work, focusing on BPO of complex "knowledge services". This paper will focus on the choice between a captive operation and an arms-length contracting model.

"Offshore captive centre" refers to a subsidiary company of the parent (host or client) company. Frequently, offshore captive centres are established in locations where there is an abundant supply of highly skilled and qualified professionals available at lower overall labour unit rates than in the client company's country of origin [15]. Captive operations are reported as accounting for about 60% of the overall BPO market in India, and for more than 70% of BPO classified as "knowledge services" [3] [6]. This finding appears consistent with the observations of Lacity et al. [12] that firms are much more likely to utilise a captive centre for OBPO than for ITO. This difference is attributed to greater maturity in the ITO market together with a client perception that BPO services may be more critical to organisational success.

The upfront decision on BPO engagement model is the most difficult in the entire offshore outsourcing process. The choice should be driven by the extent of control that a company wishes to retain over knowledge transfer and intellectual property, its degree of management commitment and upfront investment, and the extent to which competent vendors are available [3].

Strategic OBPO performed through arms-length contracts involves inherent tensions and requires a difficult management balancing act. Rottman and Lacity [24] analysed 21 large US companies and identified 15 management practices necessary for effectively offshoring IT work. While business benefits have been obtained from

these arrangements, success requires an immense amount of hands-on management, which increases transaction costs and can erode overall savings.

Utilizing a captive model may eliminate some of the inherent tensions and management overheads associated with arms-length contracting. In a captive model, internal contracting is simpler and less risky, capturing and leveraging knowledge gained in the offshore operation is easier and security and confidentiality concerns can be mitigated [4], thus supporting a more successful OBPO outcome.

## 2.3    OBPO Success

Despite two decades of ITO research, the definition of success remains under-theorised [7] [5] and success constructs are hard to find. However, two commonly adopted approaches to measuring ITO/BPO success are perceived satisfaction with ITO/BPO outcomes and the degree to which predefined objectives are realised [35]. Further, a useful proxy for perceived satisfaction is contract renewal, which has the advantage that it is easily measured and goes beyond subjective perceptions [11]. The significant growth in global BPO is presumably being driven by underlying business value and imperatives rather than mimetic or coercive influences.

ITO/BPO success must be assessed against each organisation's own criteria for assessing the success of OBPO in the area of knowledge services. The limited research available supports the conclusion that success is specific to business context and has a temporal dimension [5]. In terms of each organisation's criteria, goals sought from BPO are likely to change over the duration of a contract or engagement.
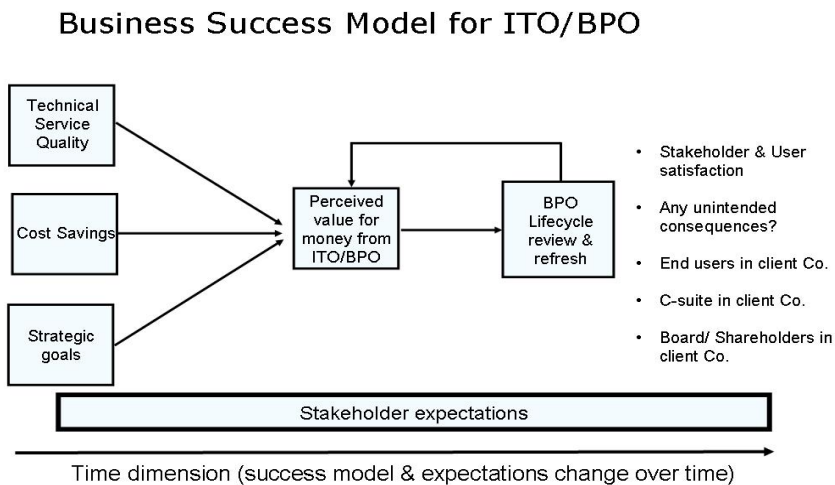


**Fig. 1.** Motivation of Organisations for Conducting OBPO

The BPO success model in this case study research, outlined in Figure 1 above, utilises concepts for cost savings, technical services quality and strategic issues [25], and incorporates the dimensions of user satisfaction judged relative to expectations [5]. Technical Service Quality can be defined as "doing things right" [16]. It is also consistent with a 25-point conceptual framework for ITO success [5], the high level parameters of which are defined as financial, operational and strategic.

## 2.4   Trust in OBPO Success

Relationship quality is an important factor in offshore ITO/BPO success [7]. Trust has been strongly linked with outsourcing success [14] and identified as an important integrating factor in outsourcing relationship quality [13]. Lee et al. [13] present an integrative model of Trust in the context of outsourcing relationships, and introduce new concepts relating to Initial Trust, Initial Distrust, Mutual Trust and Knowledge Sharing as critical success factors in outsourcing.

One of the success factors for OBPO captive centres is that they establish higher levels of Initial Trust, provide a better platform for building Mutual Trust and hence facilitate earlier and more effective knowledge sharing. Over time an "arms-length" BPO relationship could replicate these success factors, although development of Mutual Trust could take several years to develop. This is consistent with outcomes reported by Aubert et al. [2] that a stable business relationship with a long history of past communication reduces "perceived distance".

It has been observed that offshore services outsourcing can be categorised as an "experience" service, where judgements about service quality can only be made after consumption. This is in contrast to outsourced manufacturing where a quality assurance and inspection regime can monitor quality of products before acceptance and payment has taken place. In the OBPO market where there is an absence of a prior quality assurance regime, the information asymmetry between client and service provider actors can be addressed by service providers issuing a quality signal in the OBPO market. OBPO suppliers can use third-party quality certification (such as Capability Maturity Model Integration Level 5) as a means of signalling adoption of rigorous practices that have been subject to independent audit. Indian BPO service providers have shown a strong propensity to seek CMMI certification. It can be argued that the emergence of key BPO "clusters" in India, such as Bangalore, Gurgoan, Hyderabad and Pune also reflects a form of quality signalling [10].

While CMMI certification enhances trust in OBPO, customer concerns about potential ethical differences (such as perceived corruption) can undermine trust. Corruption is the abuse of entrusted power for private gain [29]. Corruption has global consequences, being both a cause of poverty and a barrier to overcoming it [27]. As India's global ITO and BPO firms continue to grow, they may act as a broom, sweeping corruption from the economic sphere [27]. While in the case of India, recent developments suggest grounds for optimism, India's ranking has actually declined in Transparency International's 2010 Corruption Perceptions Index [30].

According to Transparency International's most recent Bribe Payers Index [29], companies based in the significant OBPO countries of Brazil, Russia, India, the

Philippines and China are perceived to routinely engage in bribery as part of international business. The Bribe Payers Survey which forms the basis of the Bribe Payers Index [29], also found that information technology and banking and finance (a major source of OBPO) were among the "cleanest" sectors, hence the optimism that India's ITO and BPO firms can play a constructive role in reducing or eliminating corruption.

This paper addresses a research gap identified by Aubert et al. [2] who call for further research into "ethical distance" in offshore services outsourcing, referring to the impact of bribery and corruption in various offshore locations. We also aim to include the "perceived distance" construct [2] in a model linking quality of relationship with outsourcing success. Corruption, both real and perceived, can destroy opaque indifference (see definitions below) to the location of OBPO service provision.

## 3    Opaque Indifference

The concept of "opaque indifference" in the context of Business Process Outsourcing can be considered as the supply of BPO services where:

- the location and ultimate provider of the service is not known to the consumer of the service (Location Unknown State);
- it would be difficult or impossible for the consumer to distinguish any characteristic that would identify the location of, or by whom, the service is supplied (Indistinguishable State); and
- the consumer is indifferent to location and ultimate provider of the service because the service meets their expectations in terms of efficiency, effectiveness, assumption of risk and price (Indifferent State).

The **Location Unknown State** describes a service that is provided remotely to the location of a consumer of that service. The consumer is neither able to see the service provider nor know where the service provider is.

The **Indistinguishable State** is where a consumer cannot distinguish between a service provided by an onshore service provider in its own right and the services provided by a third party BPO provider in an offshore location. This may be achieved by using neutral communication means which do not reveal, by way of accent or tone, any clues as to the source of the response. This is reflected in the popularity, with Indian BPO providers, of online chat and non-voice services which do not reveal accent.

The **Indifferent State** is a function of the degree of trust held by the consumer and the risk to which the consumer believes they are exposed. Parallels can be found in the literature with respect to consumer acceptance of e-commerce where there is spatial and temporal separation between consumers and e-tailers [20]. Consumers are most likely to be indifferent when they have high trust that the service will be provided as expected and perceive the risk posed by consuming the service is low.

Extending the B2C e-commerce environment to an OBPO transaction environment provides some additional insights into transactional activity. In both environments there is spatial and temporal separation between the service provider and the consumer that generates uncertainty around the service or transaction, the perceived potential for financial loss and/or the loss of privacy. Research [19] indicates that there are several antecedents to actual transactional activity taking place. These antecedents are trust and perceived risk which lead to uncertainty reduction, and perceptions of risk, usefulness and ease of use [19]. When the consumer perceives the usefulness of the transaction and the ease of use as outweighing any perception of risk, they become indifferent to where and how the transaction is carried out. Pavlou's research indicates that where trust and perceived trust is high, and, perceived usefulness is high with perceived risk low, then transactions will occur.

## 4    The Relationship between Trust, Risk and Opaque Indifference

The consumer of BPO services is most likely to consume when they become opaquely indifferent to the provision of the service or transaction. The factors influencing the creation of opaque indifference appear in Figure 2 below. The model may be used to inform organisations which factors (location unknown state, indistinguishable state, ease of use, usefulness of service/transaction, levels of trust perception of risk) may need to be taken into account in order to achieve opaque indifference. Further, opaque indifference may lead to OBPO success (in terms of end customer satisfaction).
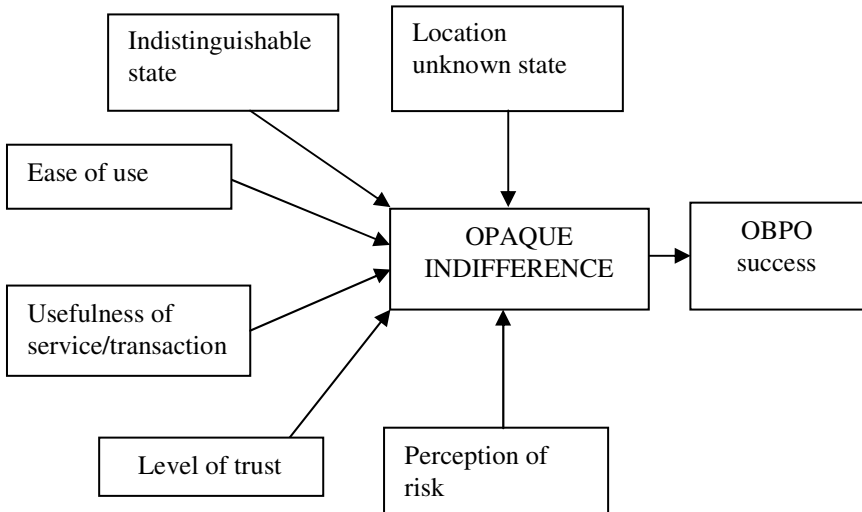


**Fig. 2.** Factors in the Creation of Opaque Indifference

### 4.1     What Happens When Opaque Indifference Is not Established in Customer Intensive OBPO?

Major banking group Santander UK outsourced its call centre operations to MphasiS in 2003. In July 2011, Santander announced that it was closing all of its Indian call centres as part of a drive to improve customer service. A spokesperson said that feedback from customers was that they would prefer to deal with call centres in the UK where staff could understand them better as individuals and know where they are coming from.Santander UK CEO Ana Botin noted that,

> *Improving the service we offer is my top priority. Our customers tell us they prefer our call centres to be in the UK and not offshore. We have listened to the feedback and have acted by re-establishing our call centres back here.*

Clearly, many of Santander's UK customers did not feel opaque indifference with the result that customer satisfaction was lower. Dealing with an offshore call centre was a frustration that could lead to customer dissatisfaction.

## 5     Research Approach and Data Collection

The overall data set utilised in the research was gathered through interviews conducted over a period of four years, 2006-2009, with staff and senior management of 6 client firms and 5 service providers, located across 8 cities in India, Australia and Europe.

Data collection involved approximately 350 hours of interviews utilising a semi-structured interview format. The interview protocol enabled interviewees to answer open-ended questions, expand on their responses and provide additional information. Interviews were recorded, transcribed and written up as a structured narrative (that included analysis of key insights from the interview). The transcripts were then provided to interviewees for verification of accuracy of interpretations. Multiple interviews were conducted with some individuals in order to clarify issues from earlier interviews, seek additional insights, and track progress on major issues.

A longitudinal case study methodology [36] was adopted because of its suitability for an holistic, in-depth investigation of a phenomenon in which business context has been recognised as critically important. The research was implemented and conclusions drawn from the data utilising the approach outlined by Eisenhardt [8]. The researchers identified success factors from the case study data which provided the framework for building opaque indifference theory.

This research utilises data gathered from the case studies involving the five companies in Table 1 below. The cases involved both client companies and their service provider (which is a captive centre in some instances) in a range of industries, company sizes and engagement models. The business activities fit the definition of "Knowledge Services". Knowledge services are processes with a variable discretionary element to their delivery that require the application of business judgement and domain knowledge.

# 6      Five Case Studies

The five case studies show that opaque indifference is necessary for successful BPO and how each company is progressing opaque indifference.

**Table 1.** Summary of Case Details

| Client Company | Description | Industry Sector | OBPO Supplier | Nature of BPO activities |
|---|---|---|---|---|
| ANZ | Regional multinational | Banking | Integrated captive | Accounts payable, mortgage processing, software support |
| British Airways | Global multinational | Airline | Captive initially, WNS | Passenger revenue accounting, Frequent Flier Services |
| Repcol | Australian Private | Financial services | Captive centre | Debt collection |
| Telstra | Regional multinational | Tele-communications | Teletech, Teleperformance Infosys Accenture | Customer service enquiries, product activation |
| IORAM | Australian Private | Financial services | Captive centre | Equities research |

## 6.1      ANZ Bank OTSS Captive in Bangalore

ANZ has owned a technology business now called ANZ Operations, Technology and Shared Services (OTSS) in Bangalore since 1989. Currently, ANZ employs around 3,500 people in its Bangalore captive operation, and the scope of OTSS is being steadily expanded to support ANZ's regional growth ambitions now spanning 26 countries in the Asia Pacific Region. The BPO work performed by ANZ staff located in Bangalore falls into the category of Knowledge Services because it requires application of business judgement and also deep knowledge of the banking and finance domain.

ANZ regards OTSS not just as a captive ITES operation, but has set out to create "ANZ in Bangalore" as an "integrated captive", meaning that OTSS Bangalore has fully assimilated the parent company culture. Staff members in Bangalore are given the same corporate and organisational development training as staff in the parent company, and HR and corporate policies and controls in Bangalore are the same as in

other parts of the ANZ Bank. In terms of maturation stages of offshore outsourcing, OTSS clearly fits the description of proactive strategic [4].

By adopting the model of an integrated captive where ANZ corporate culture is fully adopted, senior management is promoting opaque indifference. By delivering world's best practice in banking operations to its customers, the Bank is demonstrating that location is not a relevant factor in sourcing global services. The ANZ's selection of business activities for offshoring also contributes to opaque indifference. ANZ has a policy dating back to 2005 that call centres for Australian customers will remain in Australia. As former CEO John McFarlane noted.

> *ANZ understands customers want to be able to talk to staff in Australia about their banking and financial services needs. As a result, we have a clear policy that all call centres for Australian customers will remain in Australia.*[38]

In terms of the opaque indifference model in Figure 2, ANZ has worked systematically to achieve this status through careful selection of business process activities, assimilation of parent company culture and establishment of appropriate controls that have assisted in building trust with regulatory authorities.

## 6.2     British Airways World Network Services Captive Operation

British Airways (BA) commenced OBPO in India in 1996 when it started World Network Services Private Limited (WNS) as a fully owned subsidiary with an initial investment of 1 million GBP. The first business process performed by WNS was passenger-revenue accounting. The decision to set up WNS as captive operation was to enable BA to exercise greater control, to ensure quality and to promote internal acceptance.

From inception, WNS gained a reputation for high quality staff and management and an excellent work environment and culture based on adhering to BA's staff charter. BA also rotated long-serving BA managers through WNS in order to leverage knowledge in both directions and to improve collaboration effectiveness, thus promoting "opaque indifference" from a customer perspective.

Twelve months after inception, WNS had 350 staff and was delivering 40% to 60% cost reductions. Additional processes in financial operations and the BA Executive Club were transferred to WNS, so that by 2002 there were over 1600 staff working a 24x7 operation. The development of WNS from 1996 illustrated that BA moved rapidly through stages 2-4 of the offshore maturation model [4].

With US and global private equity readily available, BA took the opportunity in April 2002 to sell down a majority stake in WNS to Pincus Warburg, a private equity firm. British Airways retained a 30% stake in WNS and continued as a major customer. Then on 26 July 2006, WNS began public trading on the New York Stock Exchange (NYSE), becoming the first "pure play" BPO company to list on the NYSE. Transitioning to a hybrid and then a divested captive began after 8 years as a pure captive, by which time collaborative practices were strongly embedded to such an

extent that an 'indistinguishable state' had been achieved in both organisations and opaque indifference confirmed.

## 6.3     Repcol's Captive Operation in Bangalore

Repcol provided debt collection and management services to Australian and international clients. The business drivers for Repcol's offshore expansion were to address skill shortages facing the Australian business, to continue a phase of rapid growth and to lower transaction costs. Repcol's initial approach was to conduct research into the capabilities of BPO suppliers in India before deciding to establish a captive operation in Bangalore. The captive option was selected because of the non-scripted nature of Repcol's main business processes, the regulatory environment in which it operated (requiring strong corporate controls) and a concern about corruption.

Repcol sought to establish opaque indifference by adoption of the captive model to reduce the perception of risk and increase trust, and to reduce the distinguishing features of the Bangalore facility through the quality and motivation of its staff and management team. Repcol promoted ease of use for clients by providing detailed training to staff so that customers were serviced by well-trained staff. Repcol's end customers (i.e. debtors) know but were indifferent to location (location unknown state) because of subtle differences in the perceived power and status balances in the relationship [15].

Senior management leadership was also a key factor in establishing opaque indifference (indistinguishable state). The Australian CEO had a high degree of engagement with the offshore model, was immersed in key cultural factors and mastered the skills required to co-ordinate OBPO. All staff working in the Bangalore operation were degree qualified and some staff had higher degrees (e.g. MBAs). Considerable management attention was focused on managing (i.e. containing) the rate of staff attrition. Staff turnover in Repcol's Bangalore operation was 32.5% in 2006 whereas some third-party operators were experiencing 60% -130% rates of staff attrition, while in Australia comparable operations experienced 25% staff attrition per annum.

Through training of its Bangalore staff and attention to formal controls, Repcol succeeded in establishing a degree of opaque indifference by maintaining support of regulatory authorities (level of trust; perception of risk) and proactively assisting end users (i.e. debtors) resolve high stress issues associated with their delinquent credit status (usefulness of service; ease of use).

Within 3 years of commencing the captive operation, Repcol had 400 staff in Bangalore operating on two shifts optimised to match business hours in Australian and North America. Between 2001 and 2006, OBPO enabled Repcol to grow revenue five-fold in a five-year period.

## 6.4    Telstra: Offshore Business Process Outsourcing 3rd Party Contracting in the Philippines

Telstra has been a leader among large Australian companies in extensively outsourcing IT and BP services for more than 20 years [9]. Currently, Telstra's spend on services outsourcing is estimated at more than $1 billion AUD per annum. The evolution of Telstra's outsourcing strategy has been described as cautious and incremental [9]. Telstra's services outsourcing portfolio is based around six global service providers; two are Indian-headquartered, one European and three US-headquartered. Each has adopted a global delivery model, combining a local presence in Melbourne and/or Sydney, a large cadre of skilled professionals based in India or Philippines, and centres of excellence at various locations around the world.

After a lengthy period of mostly cautious incrementalism, Telstra has evolved its offshore services strategy to maturation stage 4 [4], and is now following a global multi-sourcing strategy for both ITO and BPO, with a proactive strategic focus. Telstra has maintained a strong cost reduction focus through its ITO/BPO strategy, but as a result of changing business priorities, is now placing increasing emphasis on service quality in OBPO that involves customer service.

The data used in this paper was obtained from two case studies involving OBPO to two global BPO service providers, Teletech and Teleperformance, engaged via arms-length contracts. Telstra entered into these OBPO contracts in 2008. Previously, Telstra had engaged in domestic BPO through arm-length contracts with a number of specialist service providers.

In transitioning to an offshore BPO model, Telstra conducted significant due diligence on a small number of global BPO providers, but in matters of detailed execution and management of the offshore workforce, deferred to the business experience of the two selected partners.

The initial transition to OBPO was considered to be relatively successful. Feedback from end customers indicated that both accent and sound quality created some difficulties in certain types of offshore transactions. Thus, there were early indications that opaque indifference was not being achieved.

For Telstra, business context changed significantly with the 2009 decision by CEO David Thodey to place greater emphasis on customer service. The emphasis in the customer-impacting OBPO model shifted from delivering transaction processing capacity and unit cost reduction, to enhancing service quality. The latter could be interpreted as providing service outcomes equivalent to Telstra's Australian based service or achieving a state of opaque indifference. With hindsight, the 2009 change of business context may have been an appropriate point to revisit the OBPO engagement model that involved intense contact with customers, because the process of re-orienting offshore professionals engaged through third-party contracting has proven to be difficult and slow.

For example, performance metrics in the earlier phases of the OBPO engagement reflected the focus on delivering higher volumes of cost-efficient transactions. These metrics were less appropriate when the focus shifted to improving customer service through "first pass" resolution of customer enquiries and requests for technical

support. Telstra found that its OBPO service providers, and in particular their locally engaged work forces, required significant training and support to make the changes that Telstra was seeking. Telstra responded by providing additional training to the OBPO workforce, and by committing executive time to supporting its OBPO partners to make the transition to an improved customer service focus. In effect, Telstra was working with its OBPO partners in similar fashion to captive centres.

## 6.5    IORAM's Captive Approach to Equity Analysis

Indian Ocean Rim Asset Management (IORAM) commenced operation in Bangalore in March 2006 with a view to developing a new business as a boutique funds manager that would focus on establishing an Australian Smaller Companies Fund. The principals were already familiar with an offshore BPO model as a result of a previous successful investment that they had made in an Australian small cap stock that had succeeded in establishing an operation in Bangalore.

   The principals of IORAM viewed offshore BPO not simply as an opportunity for cost reduction, but primarily as a means to achieve faster reaction times by analysing more companies and more ideas. The basic value proposition was that Australian investment portfolio managers would be supported by equity analysts based in Bangalore to focus on overlooked market sectors, with a view to finding undiscovered value within the Australian small caps, ultimately leading to better performance and increased funds under management. The straight labour cost arbitrage argument for offshore BPO to India was that suitably skilled equity analysts could be recruited in Bangalore for about 25% of the personnel costs associated with an Australian analyst. However, the additional costs of coordinating activities of equity analysts conducting research and modelling from Bangalore must also be factored into the cost reduction equation. According to one of the principals of IORAM:

> *Historically, the Australian small cap sector has been under-researched because analysts are time poor with too many companies to follow up.  Experienced Australian analysts become slaves to financial model maintenance rather than being able to get out and investigate smaller companies, talking to management, searching for value.*

Electronic upload of financial data from annual reports and ASX stock market releases provides a base financial model for each company. IORAM equity analysts based in Bangalore perform financial analysis of Australian small cap stocks, including the following tasks:

- The creation of financial models in Excel to forecast key company metrics, including Price Earnings Ratio, Earnings Per Share, Net Profit After Tax, etc.
- The tailoring of these financial models to provide ready manipulation of key value drivers and "what if" scenario analysis based upon Investment Manager feedback from company visits in Australia.
- Identification of any sustainable and responsible investment (SRI) issues.
- Monitoring stock for updates and changes (e.g. new information, quarterly and half yearly earnings reports) and keeping all models up to date.

- Response to requests for reports and analysis on Australian companies being tracked via database of models.
- The mining of the models database in order to identify potential value investment opportunities.

Equity analysts employed by IORAM in Bangalore generally have an MBA and a first degree in a quantitative discipline (including Engineering, Accounting, Commerce, Science, Biochemistry), and some have post-graduate finance qualifications (for example, actuarial). Typically, they will have a background as a financial equities analyst for a stock broker, mutual fund or investment bank, and some have experience of the US equities market. Analysts are organized around market sectors such as Oil & Gas, Pharmaceuticals, Financial Services, IT and Engineering.

IORAM aims to transform small cap equity analysis from a "cottage industry" to an industrial strength process that can be replicated.  As part of this transformation, it aims to increase the number of stocks that can be analysed in detail and to shorten the cycle time associated with successful small cap stock selection.  In addition, IORAM aims to increase the frequency with which new ideas can be generated, and also aims to free up senior, experienced investment professionals in Australia to be out visiting companies and talking with management of these companies. The principals believe that better research will result in better investment returns.


# 7     Discussion of the Cases

Data gathered in the case studies appears to confirm that the captive model has advantages for OBPO that involves intense interaction with end customers. These cases also illustrate that success in OBPO must be assessed against each company's own criteria, and that goals sought from outsourcing will change over time [5][19].

For British Airways and ANZ Bank, business context remained relatively stable. ANZ Bank operates within a strongly enforced prudential and regulatory environment, which re-inforced the advantages of a captive operation in delivering opaque indifference. During the decade from 1996, the BPO industry in India grew rapidly and matured; for British Airways, creation of WNS as a separate entity contributed to the growth of the supplier base and enabled the company to transition from a captive operation to an arms length contractual relationship while still maintaining opaque indifference in customer-intensive BPO. The investment that BA executives had made in promoting internal acceptance of the offshore captive centre and building confidence in its outputs greatly contributed to maintenance of opaque indifference after it had sold its ownership position.

In September 2006, following its NYSE listing, WNS advised investors that its travel services client base included 30 leading airlines and travel agencies, and it also announced a multi-year contract to provide BPO services for a major North American airline. In its journey from BA captive to one of the world's leading independent BPO companies, WNS demonstrated that it had mastered the skills associated with delivering opaque indifference in customer-intensive BPO.

For Telstra, the shift in business context with the launch of its company-wide program to improve customer services created a number of challenges for its OBPO conducted through arms length contracts. It took significant time and management effort to achieve a transition towards opaque indifference. Repcol achieved a high degree of opaque indifference through its offshore captive operation, albeit the power and status relationship in debt collection is different to most other forms of OBPO. IORAM achieved opaque indifference because of its highly specialised focus, and because of the business model it adopted, whereby all contact with potential clients was done by staff located in the domestic market.

The case study data supports the view that offshore captive centres can be effective in gaining and maintaining trust and mitigating perceived cultural differences in customer-intensive OBPO.

**Table 2.** Summary of Opaque Indifference Factors

| Opaque Indifference Factor | Telstra | ANZ | British Airways | Repcol | IORAM |
|---|---|---|---|---|---|
| Ease of Use | Variable, often No | Yes | Yes | No, Due to nature of activity | Yes |
| Usefulness of service | Highly variable | Yes | Yes | Yes | Requires long term evaluation |
| Location unknown | No | Yes | No | No | Yes |
| Indistinguishable | No | Yes | No | No | No |
| Perceived risks | Yes | Yes | No | No | No |
| Level of Trust in service | Not always | Yes | Yes | Yes | Yes |
| Opaque Indifference [Overall] | No | Yes | Yes | Yes | Yes |

## 8    Conclusions

Our research has shown that managing offshore service providers to maximise opaque indifference is important where OBPO involves activities that require engagement with end customers of the host or outsourcing company. The majority of OBPO is derived from industries such as banking, financial services, insurance, telecommunications, airlines and retail that are placing emphasis on improving customer service. A contribution of this paper is to provide a model of how to approach OBPO without negative impact on perceived customer service.

To influence the factors that contribute to the opaque indifference model requires careful selection of the activities for OBPO. If these activities involve variable, discretionary activities that require BPO service provider personnel to interpret the needs of their clients' end customers, then delivering effective outcomes is likely to require integration of service provider and client company systems, careful attention to privacy laws and considerable domain knowledge and training of service provider personnel. While OBPO encompasses a wide range of business activities that go beyond outsourcing of call centres, if voice services are a component in the OBPO then managing accents and establishing rapport across cultural divides presents further challenges to establishing opaque indifference.

The findings in this paper have practical implications for managers involved with designing and implementing OBPO strategies. Companies that wish to maintain a pure captive model should aim to increase collaboration efficiency with their captive centre in order to leverage the business and proprietary knowledge acquired by the captive to achieve the objective of opaque indifference from their end customers' perspective.

The client companies with successful captive operations demonstrated the importance of promoting internal acceptance of the outputs from captive centres in order to break down barriers associated with cultural factors, status differences and geographical distance. By taking actions to promote internal acceptance, client company management were proactively reducing the "perceived distance" in the relationships with their offshore captive BPO centres and thus increasing likelihood of achieving opaque indifference.

Conceptual significance of this research arises from the introduction of a new concept, opaque indifference, and the apparent contradiction that the captive model for BPO appears to be the least researched, but continues to show strong growth [6]. The research confirms that captive centres offer advantages for higher order OBPO classified as "knowledge services". These advantages arise from higher levels of relationship quality, trust and collaboration, and from facilitating knowledge capture and transfer. These advantages support opaque indifference leading to greater BPO success.

A limitation of this research is that it is focused on companies that operate from Australia and United Kingdom, with either captive operations or service providers primarily located in India and the Philippines. While the case studies have enabled data to be collected on a range of industry sectors, company sizes and different OBPO engagement models to enable cross-case comparisons, the actual number of case studies is small. In addition, it is based on qualitative data gathered over a relatively limited time span of just over 4 years. However, published case studies in OBPO are scarce, and the case studies are intended to add to the literature on this currently under-researched area.

The research has been assisted in various ways by Australian companies that have been active in OBPO to India. Similarly, Indian service providers (e.g. Infosys, WNS, Wipro) have been generous with executive access and time. This has allowed a rich data set to be collected but also has the potential of bias towards success, because it has been easier to obtain access to senior executives and corporate information in

cases where there is general acknowledgement that the OBPO model has delivered business benefits. Companies are less willing to provide information and access to projects that are considered to be unsuccessful or are experiencing difficulties. However, the concept of opaque indifference and the importance of captives in the BPO environment needs further investigation (particularly non-English speaking cases) of more captives, third party suppliers, and hybrid suppliers, in more countries.

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# Exploring Failures at the Team Level
# in Offshore-Outsourced Software Development Projects

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**Abstract.** Offshore-outsourced software development (OOSD) projects involve multifaceted risks throughout the project execution, as they are handed over to third-party organizations and thus are exposed to more risks than in domestic outsourcing or captive offshoring. We concentrate on failed OOSD projects in this paper and analyze the unique aspects of such projects at the team level that lead to failures. Using the grounded theory approach, we conducted semi-structured interviews with 19 project managers involved in OOSD project failures from the vendor and client sides, who are based in India or Switzerland. We developed a set of propositions regarding multiple teams in the OOSD project context to explain failures. Integration of inter-organizational offshore and onshore teams from the vendor and client sides was found to be indispensable in avoiding project failures. Six categories of unique aspects that lead to OOSD project failures were identified and discussed in this exploratory work.

**Keywords:** Offshoring, outsourcing, software project, failure, project team.

## 1    Introduction

IT offshoring continues to experience significant growth levels despite the downturn in the global economy, and the global distribution of knowledge work is expected to increase further in the near future [1]. Although the proposition of sourcing software development services from low-cost countries like India and China remains compelling primarily because of cost factors, the multifaceted and inherent risks involved in third-party collaborations need to be managed effectively [2]. These global third-party outsourcing arrangements, or offshore outsourcing, involve particular challenges because the governance and organizational structures and project management styles of project partners could differ widely and thus affect the project execution. Offshore outsourcing involves more risks than captive offshoring, where the offshore organization together with the onshore organization mostly share the same processes and platforms that allow better collaboration than in offshore outsourcing.

The challenges involved in offshore-outsourced software development (OOSD) were discussed extensively in the literature [3]. OOSD projects, with their inherent risks, are more prone to failures than captive offshore or domestic development projects [4]. The offshore-specific factors such as culture, language, knowledge transfer issues, and geographical separation make team management challenging [5, 6]. Several communication, coordination, and collaboration mechanisms need to be in place so that the vendor and client team members in OOSD projects can interact effectively [7].

A review of IT outsourcing literature reveals that most research focuses on the IT outsourcing decision processes and the management of IT outsourcing operations on engagement level rather than on operational level [3]. Several academic and practitioner studies have reported on failed offshore projects [e.g., 8, 9]. Research has revealed several aspects that contribute to the lack of success in offshore-outsourced projects. However, little focused research has been carried out on IT offshore project failures and failed software development projects. Further, the aspects that lead to failures were not studied extensively, and the extent to which the team-level interaction or the lack of its intensity that contributes to failure is not well understood.

The complexity of the nature of software development makes it vulnerable to failure, especially in offshore outsourcing [6, 10]. The definition of project failure varies widely in the IS research. Projects can be judged from the implementation and operations perspective [e.g., 11, 12] as well as from the project development perspective [e.g., 13, 14]. As we focus on software development processes in offshore projects that could not be completed in this research, we will adopt the project development perspective. We define *project failure* as the cancellation of the OOSD project, resulting in premature termination of contractual activities between clients and vendors before the information system becomes operational. This could include the insourcing of the project because of the vendor's inability to implement the software, the vendor replacement, the cancellation of offshore activities, or simply the project cancellation at some point. As the project risks are multi-faceted, the cancellations can happen during any phase of the project.

Faraj and Sproull [15] define *team* as "a primary mechanism for accomplishing organizational work" for in-house development projects. OOSD project setup involves team members from vendors and clients working at onshore and offshore sites. Typically, three different teams will be involved in OOSD projects, namely, client, vendor onshore, and vendor offshore teams.[1] Instead of working as a single team unit like in in-house projects or to a great extent in captive offshoring, offshore-outsourced projects involve loosely coupled three-team units that work for a common objective. The vendor offshore and onshore teams will be mostly sub-units in the global organization, with dedicated "linking" points [16]. The IS outsourcing context involves boundary-spanning activities across organizations. In this work, we define

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[1] Since client and vendor onshore team members mostly work at the onshore site, they will be together referred to as "onshore teams" in this paper. The vendor offshore team will be referred to as the "offshore team." OOSD projects can have client members distributed across the globe within the same organization.

*project team* as a group of project members from different organizations that work together to accomplish a common objective. In the IT outsourcing context, the organizational objective will be the development of the information system as contracted by the client and guided by the client's organizational objective. Onshore and offshore teams will have different task definitions, and the challenge in the offshore context will be to integrate different teams into a single project team. The interactions between offshore and onshore team members require leadership and organizational structures that allow team development, defined as well as undefined communication processes, and understanding of cultural values and norms etc. The organizational team setup at the vendor side, with its onshore and offshore teams, exacerbates the coordination activities in OOSD projects. The failure to work together as a project team has been an unexplored area in IT outsourcing. We investigate the unique project team aspects in OOSD projects and the team member (non-) interactions that lead to project failures in an exploratory manner. In this paper, we will attempt to answer the following research question:

*Which unique aspects of offshore-outsourced software development projects that are related to the project team lead to failures and how do they lead to failures?*

## 2    Research Methodology

We employed the grounded theory methodology in this exploratory research [17], as it offered the appropriate methodology to provide theoretical explanations about failed OOSD projects. The sensitivity of failures among both vendors and clients in the IT industry forced us to investigate failures from project managers' experiences. We conducted semi-structured interviews [18] with client and vendor project managers who are involved in projects from India and Switzerland. The semi-structured interview has an incomplete script and leaves room for improvising questions to obtain the rich details of OOSD projects. Our overall approach can be termed as "qualitative-exploratory" [19] and we used semi-structured interviews as a method to "obtain a rich, in-depth experiential account" of projects from the failed OOSD projects [20].

Based on our previous research [21, 22], we focused this research on the team level, as its relevance was found to be key to OOSD project success. We interviewed 19 offshore project managers (PM) until a theoretical saturation of categories, concepts, and properties was reached according to the grounded theory approach. These 19 managers (9 from the client and 10 from the vendor sides) each provided details of a major OOSD project failure in their careers. They were also asked to discuss the most successful OOSD project in their career, which is out of the scope of this paper. The interviewees with failure experiences were found through the major organizations involved in offshoring in Switzerland and India. We have further requested that interviewees suggest other candidates with similar failure experiences for interviews. Another 23 interviews could not be used for the analysis, as the PMs interviewed had a different version of the definition of failure and so their project cases did not qualify within our narrow failure definition. These invalid interview cases came under the categories of challenged projects [14] or near-shore projects

within the same continent [23]. Table 1 provides the overall career experiences of the interviewees from the client and vendor sides. The higher average experiences of client PMs in project and OOSD project management also explain the more average number of successes and failures witnessed by client PMs than vendor PMs.

**Table 1.**  Overall career experiences of project managers

|                                            | Clients | Vendors |
| ------------------------------------------ | ------- | ------- |
| No. of interviewed project managers        | 9       | 10      |
| IT-related (average years)                 | 16.56   | 15.22   |
| OOSD project (average years)               | 8.33    | 9.56    |
| Project management (average years)         | 11.11   | 8.56    |
| OOSD project management (average years)    | 7.22    | 6.11    |
| Average no. of OOSD failures               | 5.89    | 1.78    |
| Average no. of OOSD successes              | 21.67   | 13.33   |

We employed grounded theory techniques for coding and analysis. Each interview lasted around 1 hour, and the transcribed texts had lengths of between 8 and 16 pages. We used MAXQDA 10 software for data coding and analysis. Open and axial codings [17] were employed to build thematic categories of data and to understand the relations between the emerging concepts. The concepts were further interpreted to provide theoretical explanations for OOSD project failures.

We aimed to develop a substantive theory to explain OOSD project failures [24] at the team level. The theoretical explanation was further developed using the generalizability framework of Lee and Baskerville [25] to derive propositions from empirical statements to theoretical statements from the qualitative data analysis.

## 3      Related Literature

We discuss the relevant literature related to the team-level performance in this section.

According to Carmel and Agarwal [26], physical distance between team members results in coordination, control, and communication problems. The main challenge they identified in global software development is the negative impact of distance on communication and its negative impact on coordination. Carmel and Abbott [7] studied the configurations of global software development in offshore and near-shore destinations and found out that "distance still matters"; they found out that the difficulties introduced by distance include communication, control and supervision, coordination, creating social bonds, and building trust.

Carmel and Tjia [27] maintained that five centrifugal forces affect offshore software development and thus the performance of team members. They include communication breakdown, coordination breakdown, control breakdown, cohesion barriers, and cultural clashes. Heeks et al. [28] argued that there exists geographical, cultural, and linguistic distances between the client and vendors, which affect the relationship. Culture, tacit knowledge, and informal information were found to be the major factors affecting outcomes.

Krishna et al. [29] investigated cross-cultural issues of outsourcers in North America, Western Europe, and Japan with Indian software providers. They concluded that cross-cultural software production as a troublesome process, and they recommended that because of the importance of cultural matches between countries, the choice of "culturally neutral" projects such as embedded software and middleware would reduce cross-cultural issues. Interestingly, the success of India and other countries in offshore software development is in application software, as opposed to the culturally neutral software recommended by Krishna et al. [29].

Cultural distance has been widely cited as one of the factors affecting the outcome of offshore software development projects. Leidner and Kayworth's [30] review of culture proposed a tripartite view of IT-culture conflict, in which IT values, group member values, and values embedded in an information system provide the key to conflicts. The beliefs, ideologies, norms, and values of project members from different countries vary and thus affect the outcomes of IS development projects [6]. The widely cited cultural dimensions of Hofstede [31] that are applied in the offshore projects include power distance, individualism, masculinity, and uncertainty avoidance. They explain the differences between personalities on a national level. Narayanaswamy and Henry [32] proposed the design of a control strategy that fits the cultural setting, which will increase the project performance in offshore software development. Geffen and Carmel [33] suggest that there is *the cost of cultural distance* (apart from transaction costs) that the clients have to overcome to outsource to a different country. Beck et al.'s [34] research on an Indo-German case study found the relevance of combining formal and informal project management measures with "cultural intelligence" about the vendors (Indians) to produce the expected outcome. A mutual cultural understanding among team members was found to be the key for effective results. Ebert and De Neve's [35] study of global software development projects in a multinational company showed the necessity to communicate and coordinate intensively in order to achieve project success in globally dispersed teams. They argue that even "a common syntactical language does not necessarily mean the same semantics and pragmatics" (p. 68) to illustrate the interpretations of symbols in different cultures.

Fabriek et al.'s [36] study analyzed successful and failed offshore outsourced and captive software development projects and found that informal communication between team members played a key role in successful projects. Improper planning was found to be the main reason for failed projects. Prikladnicki and Audy's [37] case studies of captive and outsourced offshore projects point to the communication problems between team members. Communication between team members affects the knowledge transfer because the distances affect complete and unambiguous knowledge transfer [36, 38].

Damian and Zowghi's [39] case analysis of captive software development in the US and Australia found that face-to-face communication improves informal

communication and thus trust between the team members. Oshri et al. [5] argue that face-to-face meetings improve social ties and offer better possibilities to coordinate the tasks between team members in globally distributed projects. Prifling et al. [40] report the introduction of more formal project management that led to project success after the deliverables in an Indo-German project failed to meet the initial expectations of the client. Once trust has been established the amount of formal project control could be reduced. The differences in language, culture, and personalities could affect trust building and thus the technical communication[2] in projects [41]. Kotlarsky and Oshri [42] emphasized the importance of social ties, especially rapport and trust among globally distributed team members, for successful collaboration; social interactions were found to have aided informal communication in projects.

McGrath's [43] time, interaction, and performance (TIP) theory of groups offered a framework to understand the problems of teams and provided explanations regarding teams within an organization. The TIP theory is widely cited in social science and has been used in IS research to study group changes over time [e.g., 44, 45]. Time, interaction, and performance are the three dimensions that are unique for group works or projects and can be well applied to analyze the outcomes in OOSD projects. This theory posits that group members engage in multiple, concurrent projects and any group action involves modes and functions that contribute to organizational and group development. The group modes do not follow a fixed sequence of phases, and the group members can follow different mode paths in concurrent projects. This is in contrast to Tuckman's [46] popular model that follows a sequence of activities in four phases, namely, forming, storming, norming, and performing. The four group modes of the TIP theory include [43]:

- Mode I: inception and acceptance of a project (goal choice);
- Mode II: solution of technical issues (means choice);
- Mode III: resolution of conflict, that is, of political issues (policy choice); and
- Mode IV: execution of the performance requirements of the project (goal attainment).

The team activities follow the default path from mode I (inception) to mode IV (execution) if the tasks are familiar and established. However, the OOSD project scenario brings several challenges that are unfamiliar for the team members, which result in a great amount being spent on modes II (problem solving) and III (conflict resolution).

Dennis et al.'s [47] theory of media synchronicity explains the communication processes in groups in terms of conveyance and convergence of information. Familiarity of the context requires less emphasis on the convergence of meaning between members and vice versa. Their use of the TIP theory explains the use of

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[2] Sharma et al. (2008, p. 64) define technical communication as "communication activities that take place between a client and vendor based on the outsourcing contract managed by client as well as vendor project managers using different communication modes—from the exchange of information (explicit) to the sharing of nuanced intelligence (tacit)."

media and communication processes within a team. Jarvenpaa and Leidner's [48] study of communication and trust in global virtual teams showed the importance of communication behaviors and member actions resulting in "swift" trust, especially in the group's early formation stage. Unfamiliar situations will require team members to go through all four modes to establish trust in the team.

The literature review shows a lack of research that investigates failures in OOSD projects. Consequently, the works that provide a direct explanation of failures are missing. In order to explore the failures in detail, we analyze failed OOSD project cases to provide theoretical explanations of the specific aspects that lead to failures.

# 4     Discussion

Table 2 provides an overview of the failed OOSD project cases[3] that were analyzed from the interviews. It gives a summary of the countries involved in OOSD project, the industry where the project was executed, and the cancellation phase during the project. All projects involved India as an offshore destination, and different industries such as banking, air transport, power generation, public sector, insurance, and automotive were represented in the sample. All the projects were cancelled during the last 10 years.

**Table 2.** Failed project cases

| Interview cases | Countries involved | Industry | Cancellation phase |
|---|---|---|---|
| A | Germany, India, Switzerland | Power generation | Integration and testing |
| B | India, Switzerland | Banking | Integration and testing |
| C | India, Switzerland | Insurance | Integration and testing |
| D | India, Switzerland | Banking | Integration and testing |
| E | India, Switzerland | Banking | Integration and testing |
| F | India, Switzerland | Insurance | Requirement analysis |
| G | India, Switzerland | Banking | Integration and testing |
| H | India, Singapore, Switzerland | Banking | Integration and testing |
| I | India, Switzerland | Air transport | Integration and testing |
| J | Germany, India, Switzerland | Insurance | Integration and testing |
| K | India, Switzerland | Banking | Integration and testing |
| L | India, USA | Automotive | Integration and testing |
| M | India, Switzerland, USA | Insurance | Requirement analysis |
| N | Germany, India, Switzerland | Public sector | Integration and testing |
| O | Germany, India | Automotive | Integration and testing |
| P | India, Switzerland | Public sector | Integration and testing |
| Q | India, Switzerland | Insurance | Integration and testing |
| R | India, Switzerland | Air transport | Integration and testing |
| S | India, Canada, Switzerland | Insurance | Requirement analysis |

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[3] We will use the terms "project cases" and "cases" interchangeably in this paper. This should not be mistaken for case studies.

Except for case Q, which was executed using agile methodology, the rest were executed using the waterfall model, which includes the following phases: requirement analysis, design, coding, and integration and testing. Most of the projects dragged on to the integration and testing phase, when the final decision to cancel the project was made. The cancellations happened earlier only in cases F, M, and S, when they occurred during the requirement analysis phase, where the difficulties in executing offshore projects were noted earlier.

We will discuss the unique or specific aspects related to the OOSD projects and team performance that led to failures in this section. The data analysis has resulted in six general categories of project aspects that explain the project failures. They include offshore-specific and non-offshore specific aspects. *Offshore-specific aspects* are unique to OOSD projects and require special attention. They include project team-building efforts, team collaboration, distant team judgment, and offshore project management capability. *Non-offshore specific aspects* are not unique to OOSD projects, but they require more attention than in domestic software outsourcing projects in order to offset the disadvantages caused by an offshore-specific environment. They are common project execution structures and team member competencies.

McGrath's TIP theory [43] has provided explanations of failures within an organization at onshore or offshore sites. However, it has a limited ability to explain the interactions between team members in multiple teams from at least two organizations and the offshore-specific factors that resulted in OOSD project failures. We have formulated theoretical propositions that are relevant for the OOSD project context, in which multiple teams from the outsourcer and outsourcing organizations come together to design and develop the information system.

## 4.1    Project Team-Building Efforts

Most failed projects suffered their fate because of the lack of a project team that worked together. The vendor and client teams did not work as an integrated project team. The onshore vendor PM of case P remarked the following about the team-building exercise and the barriers that led to failures: "You cannot ignore the status of team building. And if you start to ignore it, even if we have methods, even if we have processes, we are running a project. We are not doing business as usual. It's not something that has a clear input and a clear output. … And there I need to have a very high focus on team building. And as more of my team is distributed, the more I need to take care of our team building." There were few regular face-to-face interactions in failed projects, and so the teams lacked the social ties to openly discuss the project matters. The buildup of integrated teams with members from the client, vendor onshore, and vendor offshore teams was found to be a critical aspect that led to failures.

Face-to-face interactions of the team members who travel to onshore or offshore premises will add to the development of social ties [5] and eventually lead to better rapport and trust [42] among the team members. The team members should be clear about their roles and responsibilities from their inception in the project team, and the

PM should address the need and opportunities to interact with offshore and onshore team members right from the project inception [43]. Team member inception could happen at any phase during the project [43], so the PMs should make efforts to allow team-building across sites and thus make the new team members feel a part of the project team. Most offshore team members were found to be inducted into the project in the design or coding phase. Especially, the missing link in many failed cases was a lack of team affiliation of the offshore team members with the project team. This hindered the development of trust and rapport that could help to offset the cultural distances that exist between onshore and offshore teams. We found that story-telling is an effective tool to build relationship in offshore projects [49]. The efforts of offshore team members need to be appreciated in order to offer them recognition in the project team.

The TIP theory holds that all team members work together as an integrated team in the execution mode [43], a scenario that was missing in failed OOSD projects. The client, vendor onshore, and vendor offshore teams could form various sub-teams that have a low sense of team belongingness in the offshore project context. In order to emphasize the integrated nature of the offshore and onshore teams involved from vendors and clients, we formulate the following proposition.

**Proposition 1:** Project managers need to ensure that new team members are integrated into the project team comprising offshore and onshore teams from the client and vendor sides during all project phases in order to reduce the likelihood of project failure in the OOSD project.

## 4.2    Collaboration between Project Team Members

The project team members are not always aware of the communication barriers in OOSD projects and the need to adapt to the onshore-offshore project environment. Lack of awareness and adaptation of onshore as well as offshore team members to other cultures hinder the level of collaboration between vendor and client teams. The onshore vendor PM of case K remarked the following about the culture and collaborative work: "Collaboration is … something which is different for different cultures. So you have to adapt to the need of different cultures. For example, the Swiss are very, very people oriented. They would like to see the team. So organizing video conferences … being able to see the person by face, by organizing visits where the customer team goes to offshore to meet the project team, interacts with them, or even virtual parties." The lack of cultural sensitivities or respect for the offshore team can lead to an exodus of offshore team members, as the onshore client PM of case L experienced because of his rigid and hard-hitting communication style. Indians were offended and demotivated by the open and rigid style of the US client manager, and most of the team members eventually left the company, leading to project cancellation.

The onshore vendor PM of case P noted that the increased interactions, especially face-to-face ones, made people feel a part of the project team: "When people travel here and then back, after a couple of months they were behaving as one team. But, as

I said, the people, it was not a bottleneck, the process was a bottleneck." Further, information needs to be conveyed and converged to ensure that the distant members also understand the same semantics and thus provide a basis for effective collaboration [47]. The onshore vendor PM of case Q remarked, "Any kind of language, either written or spoken, is subjective, not objective. And so you need to have a kind of feedback to get clear on what needs to be done, why it needs to be done, and whether something written in a requirement is a typo or has truly been meant that way."

Distributed project collaboration between onshore and offshore teams in offshore projects requires an awareness among the team members of how their presence and context relate to other members [50]. This awareness among teams improves the collaboration process, which involves "constructs such as coordination, communication, meaning, relationships, trust and structure" [42]. The social presence of team members on the other side will be perceived through a combination of formal and informal communication measures, which happen over time. The initial contact between onshore and offshore members could be over lean media such as e-mail and documents. The media could gradually become richer through the use of videoconferencing and chatting, which will allow the members to make sense of their own presence in the collaboration [38]. Eventually, occasional face-to-face meetings between team members from both the vendor and client sides help to establish the social presence of one team with the other teams. Team awareness could be viewed as a collective awareness of the social presence of one team in the offshore project context and what its context means to the other teams. We formulate the following proposition to capture the relevance of team awareness during the collaboration.

**Proposition 2:** Each team in the OOSD project needs to develop  team awareness (collective awareness of the social presence of one team in the project team context and how its context relates to the other teams) in order to reduce the likelihood of project failure in the OOSD project.

The vendor PM of case N noted the situation depicted in figure 1 that led to project failure. The communication direction in the project was set up without involving the offshore team members. The vendor onshore team acted as a facilitator between the client and vendor offshore teams, and so the vendor offshore members only knew about the explicitly formulated information about the project, which was not rich in content. As the vendor offshore members were not aware of the social security systems in Europe, they were not able to provide the expected deliverables. Case I also had the same scenario, where no offshore team member was involved in direct communication with the client, which was the main reason for project failure; the offshore members did not understand the project requirements completely since the documented requirements were not explicit enough for the Indian developers to comprehend.
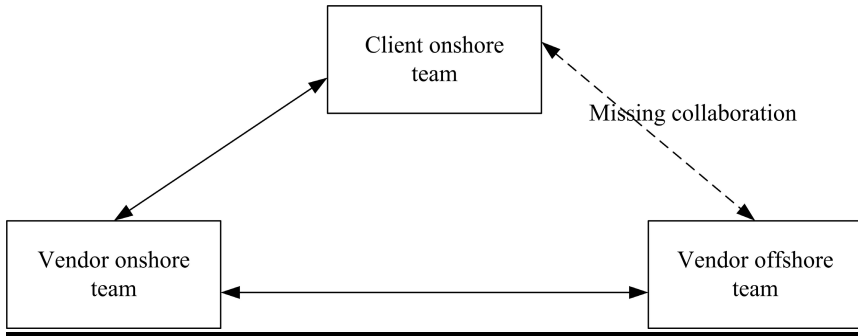
**Fig. 1.** Collaboration setup

Although software projects do not require direct contact with the customer [51], when the offshore team members are not familiar with the domain knowledge [52], the developers tend to make mistakes. Information intensity will be reduced with the intervention of facilitators located onshore, and so the vendor offshore members need to have a presence onshore to capture the missing bits and bytes relevant for the development. The collaboration level is affected by the cultural and physical distances between onshore and offshore teams that lead to information asymmetries between them [5]. Transactive memory stands for the set of knowledge possessed by the team members coupled with the awareness of who knows what information [53]. This memory system that could be established in the project team helps to find the required knowledge in the team. However, a lack of involvement from the vendor offshore team in the collaboration setup will result in the loss of tacit, embedded, and encultured knowledge required for the software development, which could prolong the project timeline and overshoot the budget [6]. The following proposition captures the nuances lost in OOSD project collaboration that leads to failures.

**Proposition 3:** The lack of direct vendor offshore and client onshore team collaboration will increase the likelihood of project failure in the OOSD project.

### 4.3    Distant Team Judgment

The physical distance between the offshore and onshore team members plays a key role in understanding the project team members. The client PM of case D remarked that since the team interactions were so rare that the offshore team's judgments could only be made by the quality of deliverables,  "You're going to get a status report and as long as all the statuses were agreeing, you didn't have any interaction until the next day or whenever the next project review was. So they worked in isolation because they were offshore. We worked in isolation because we were onshore." The onshore vendor PM of case P noted the difficulties in judging the team and the progress in projects: "There is a barrier in communication. I cannot look into the eyes of the other one, I cannot hear the kind of volume and melody his voice is making or her voice is making. I cannot really ask questions." The PMs are not always in a position to offer

opportunities for team members to socialize in projects so that the teams can assess or judge what the other teams are currently working on.

The geographical distances between onshore and offshore teams that lead to separation despite the availability of information and communication technologies have been discussed extensively in the literature [23, 26, 27]. In offshore software projects, distance can exacerbate the difficulties in communication, control, coordination, and socializing [7]. If the difficulties of distance and culture can be overcome, the onshore and offshore teams can collaborate effectively, and the PMs will be in a position to judge the progress of team. This includes understanding whether some of the offshore manager's exaggerated assurances despite problems are meant for the future or provide the current status. Beck et al. [34] found that that the cultural intelligence of project managers could positively affect the project outcome. McGrath's TIP theory [43] offers an explanation regarding team synchronization over distances for in-house projects. The PMs in the OOSD project should be able to synchronize the project tasks and be able to judge the progress of the other teams, especially the vendor offshore team. We formulate the following proposition to underline the ability of PMs to judge the other teams.

**Proposition 4:** Project managers need to synchronize team tasks with other teams continuously in order to judge the progress of other teams and thus reduce the likelihood of project failure in the OOSD project.

### 4.4    Offshore Project Management Capability

The inability to manage offshore project as well as the project team will result in project failures. Project case M was cancelled in the requirement analysis phase, as the PM did not have the confidence to manage the offshore resources. The main reason for the failure in case B was the inability of the vendor coordinator at the onshore premise to communicate and manage the resources in the offshore location. Apparently, the coordinator was only acting as an extended official of the company in Switzerland and both arms of the same company operated without much organizational coordination. This offshore-onshore management gap happened both at the vendor and client sides.

The know-how to conduct offshore projects successfully by coordinating and controlling the resources forms the key to manage OOSD projects successfully [27]. The human resources need to be put in the right place to avoid management overhead and information asymmetries. The offshore-specific attributes such as distance, language, and culture [54] should be addressed to cause minimum friction for information flow. The PMs should have the ability to manage the distributed resources in an optimal manner. Although it cannot be expected that every team member has previous offshore project experience, the PM should have the experience of participating in at least one virtual or distributed global project, or he or she should be supported by a person with offshore project experience. Erickson and Ranganathan [55] reported that the project management capabilities that the client should master include project planning, control, governance, and team management. On the other

hand, Gopal et al. [56] noted project management techniques are required by the vendor to overcome the geographic distance with clients. In organizational setups where the vendor offshore team works as an extended arm of the vendor onsite team, it is important that both vendors and clients acquire the capability to manage their side as well as understand the organizational and cultural differences of the other side.

McGrath's TIP theory [43] explains that the project setup needs to consider the interaction possibilities and synchronization of tasks within a team. However, the ability of the PMs who manage the challenging role of integrating the project resources and efforts across the three teams is not explained satisfactorily. The understanding of cultural and organizational differences and sensitivities of the other teams by PMs play a great role in avoiding project failures. Both client and vendor teams should have project managers who possess the capability to manage the coordination and collaboration difficulties during the project execution. We formulate the following propositions that offer explanations of how to avoid management and coordination gaps between offshore and onshore teams.

**Proposition 5:** Project managers need to possess project management capabilities (project planning, control, governance, and team management in offshore projects) in order to reduce the likelihood of project failure in the OOSD project.

**Proposition 6:** Project managers need to consider the organizational and cultural differences of other teams during the execution in order to reduce the likelihood of project failure in the OOSD project.

### 4.5    Common Project Execution Structures

The lack of common understanding about project execution among team members results in projects not being completed according to agreed-upon budget and timelines. The geographical and cultural distances demand the need for mutually agreed project structures for successful execution. The vendor PM of case I expressed his disparate situation, saying, "If you can't describe it in a handbook, it ain't working." This has resulted because of misunderstandings in the available documentation, in which the cultural and domain-specific nuances could not be codified. Case F had to be cancelled in the requirement analysis phase as the project scope kept changing and the insecurity surrounding executing such a project offshore was high. The client PM of case M has mentioned that the scope change of internal projects was still possible, whereas with outsourcing arrangements, the changes proved very difficult.

According to the TIP theory, projects that have ill-defined processes will spend more time in problem-solving and conflict resolution modes [43]. The lack of co-located work possibilities requires the definition of project structures in an unambiguous manner. Project structures involved in OOSD projects have to be formulated from the beginning so that the projects can spend most of their time in the execution mode. They include scope formulation, requirement specifications, approvals, communication, documentation, tracking, and roles and responsibility

assignment etc., which require more formality in the absence of direct meeting possibilities. As the opportunities for face-to-face informal communication become rare for the project team, the additional formal structures that are shared by clients and vendors will offer fewer confrontation possibilities. Karahanna et al. [57] assert that work practices rather than individual values and beliefs will dominate during project execution. Mutually accepted structures and expectations about project management processes form the fundamental basis from which to execute offshore projects [8, 58]. We formulate the following proposition regarding the common project structures in OOSD projects, where the organizational and cultural differences cause various perceptions of project activities.

**Proposition 7:** A common understanding of project structures between onshore and offshore teams will reduce the likelihood of project failure in the OOSD project.

### 4.6    Team Member Competencies

Project team members should possess competencies varying from technical, communication, and domain knowledge in order to execute the project successfully. Although this expertise can result in staffing issues in domestic outsourcing projects, it has become more pronounced in the Indian context, where market forces play a big role in determining available human resources. Several vendors complained about the unavailability of the promised resources in the project, which led to disappointing situations. The vendor PM of case Q found that the competencies of the Indian developers were not adequate for the insurance domain, as they lacked the depth of industry experiences. The onshore vendor PM also noted the following about the competency of available resources in the failed case I: "I think the work we planned to outsource was just too complex and a lot of industry knowledge was required. We learned that it only works if you can describe it to the letter in a handbook."

Technical and domain-specific knowledge were identified in the literature as critical for offshore software project outcome [4, 59]. Balaji and Ahuja [60] have suggested the integration of external and internal knowledge within the team as critical for project success. The team member competencies have to be addressed during the inception of the project [43]. The PMs need to ensure that the team members also possess sufficient communication competencies to interact with other teams in the challenging offshore context. The project setup with the right resources is well explained by McGrath's TIP theory in the inception mode. This inception problem could be addressed for all teams involved from the project's start. However, the client PMs need to be more aware of the distance and the offshore team competencies, which cannot be controlled well by clients.

## 5    Conclusions

We have attempted to investigate the unique or specific aspects of offshore-outsourced software development (OOSD) projects related to the team level that lead

to failures, and explained them using a set of theoretical propositions. The grounded theory approach allowed us to analyze the empirical results together with the existing research in order to develop a theory of multiple teams to explain the OOSD project failures.

McGrath's time, interaction, and performance theory [43] offered explanations of failure within single teams in an organization. However, the multiple teams at offshore and onshore sites involved in OOSD projects from both vendor and client sides required explanations regarding inter-organizational project cooperation. We proposed a substantial theory of multiple teams to offer explanations of project failures in the OOSD project context. We offered the view that the onshore and offshore teams from the vendor and client sides should work as an integrated project team in order to avoid project failures. The six unique team aspects that pointed to project failures could explain project failures in OOSD projects to a great extent.

This research was limited to the project cases narrated by the PMs of failed projects in interviews. Although we have collected rich data regarding failures, they had more breadth than depth, as the cases were from a single viewpoint. However, we believe that this exploratory work has contributed to the IS offshoring and failure research, which is a rare field of investigation. Another limitation was the concentration of India-centric projects, which adds bias to the data. The research was also limited to software development projects that are done by third-party organizations in offshore countries.

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# Global Sourcing of Information Systems Development - Explaining Project Outcomes Based on Social, Cultural, and Asset-Related Characteristics

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**Abstract.** Based on Practice Theory and Transaction Cost Economics, we integrate three perspectives of prior research: we explain the relation between the outcome of offshore ISD projects and cultural, social, as well as asset-related project characteristics. We substantiate and refine our model with a multiple-case study of eight projects in which German companies offshored ISD tasks to China, India, Eastern, and Central Europe. We find that the project outcome is heavily dependent on the relationship quality of the partners which in turn depends heavily on habitus differences and the social distance between them. Two management practices, namely boundary spanning and offshore partner empowerment, can reduce the negative impacts of these factors. Moreover, we find that the required transfer of client-specific knowledge can have negative effects on the project outcome. However, the observed effects do not match the traditional explanation given by Transaction Cost Economics. Instead, the explanation of Practice Theory fits the data: the specific knowledge is embedded in a socio-cultural field of struggle and constitutes a valuable resource.

**Keywords:** Global software development, IS offshoring, Practice Theory, Transaction Cost Economics, cultural differences, competition.

## 1 Introduction

Attempting to benefit from low wages and the availability of large pools of skilled IS professionals, numerous firms have been transferring labor-intensive IS functions such as information systems development (ISD) to internal and external offshore partners in other countries, first of all to India [4]. While India is by far the most popular IS offshoring location for Western firms at the moment, others are rapidly gaining more interest. However, research has widely neglected that the appearance and growth of a variety of new offshoring locations and the thereby increased need for cross-cultural collaboration on project level also

pose new challenges for research. The majority of contemporary scholarly contributions on IS offshoring are lacking generalizability across cultures and cannot thoroughly explain the effects of cultural diversity on offshore ISD projects. Nevertheless, they have been acknowledged to be an important and influential aspect of IS offshoring projects [4]. Despite the fact that many of such projects have failed to achieve their goals, little recognition has been given to the questions how and why the effects of cultural and social factors may vary between projects and account for their outcome. One answer is that these effects do not stem from cultural and social factors only, but are also dependent on factors related to the projects' IS assets [11]. Research in domestic outsourcing has frequently examined transaction characteristics such as asset specificity [27], but in a cross-cultural context such endeavors remain scant.

While the need for project management practices adapted to cross-cultural settings has been recognized early in IS offshoring literature [4], many scholars focused on descriptive research approaches and the collection of best practices [35]. Recently, a more theory-driven and detailed analysis of socio-cultural aspects and their consequences for offshore ISD projects has emerged . While some scholars have explored their effects on collaboration and coordination [29,23,1] as well as financial structures [11], we agree with others that the dependent variable should be the outcome of the IS projects [41,34,19]. In this paper, we apply Practice Theory (PT) and Transaction Cost Economics (TCE) as complementary theoretical lenses. While the latter emphasizes the danger of opportunistic behavior on an organizational level, the former focuses on social interaction based on resource distribution as well as learnt ways of thinking and acting. Accordingly, this paper builds on both theories to explain variations in offshore ISD project outcome from the viewpoint of German onshore partners. In detail, the research objectives of this paper can be summarized by the following questions: *(1) How and why is the outcome of offshore ISD projects influenced by cultural, social, and asset-related characteristics of the projects? (2) How does active management influence these aspects in order to improve the project outcome?*

In the following, the theoretical foundations of this paper are elaborated. A research model is developed based on TCE and PT. Substantiating the model, eight case studies are presented in which Germany-based companies or strategic business units offshored ISD projects to different locations. We examine projects with offshore partners located in directly neighboring countries (Czech Republic and Poland), more distant nearshore locations (Russia and Belarus), as well as India and China as the most popular and one of the most rapidly growing offshore locations respectively . The findings are discussed under the light of TCE and PT and help to provide a better understanding of the influence of cultural diversity, social factors, as well as task characteristics in offshore ISD projects. Finally, implications are highlighted and conclusions are drawn.

## 2    Theoretical Foundation and Research Model

### 2.1    Literature Review and High-Level Model Structure

IS offshoring comprises the partial or entire provision of an IS function such as ISD by an offshore partner to an onshore partner within or outside the same company while the partners reside far away from each other, i.e. in different countries. There are cultural and social boundaries which can impact offshore ISD projects [39]. Scholarly research on these factors and their effects has been maturing over the last decade. Starting with conceptual models of cultural differences as a challenge specific to IS offshoring [4], researchers proceeded in search of techniques and management practices to alleviate negative impacts on project success [35]. These studies definitely provide fruitful findings. However, they lack detailed analyses of the prevailing cultural influences [41,6]. Subsequently, studies were conducted addressing cross-cultural collaboration in offshore ISD projects based on different theoretical lenses. On the one hand, this led to a better understanding of the way in which cultural differences between onshore and offshore employees can impact the relationship of the partner organizations and lower project success [41,23]. On the other hand, new theoretical perspectives have helped to understand that negative implications for IS offshoring project success are not only rooted in cultural differences. They also stem from status and resource inequalities which can induce competitive behaviors within an offshored project and create social boundaries [29]. Such boundaries hamper open communication and knowledge transfer [19,33]. Consequently, adapted management practices are required to deal with them [22], thereby causing extra-efforts and impacting the project outcome [1,19]. Such extra-efforts are especially required if highly specific knowledge needs to be transferred between the partners [11].

Building on the complementary theoretical lenses of TCE [40] and PT [3,14], we aim to contribute to the further maturation of this stream of research by explaining the relation between the outcome of offshore ISD projects and cultural, social, as well as asset-related antecedents. Figure 1 depicts our initial research model. Essentially, it suggests that success on a project level is contingent on the quality of the relationship between the partner organizations as well as between the respective teams of employees. This relationship quality, in turn, is argued to depend on three factors: on a task level, the amount of specific knowledge to be transferred between the partners is proposed as the main contingency factor. On a team level, differences in ways of thinking and acting (i.e., differences in people's habitus) as well as social boundaries and competition for status (i.e., social distance) between onshore and offshore partner teams are proposed as inhibitors of a high relationship quality. Moreover, current offshoring literature recommends a variety of management measures to improve the project outcome [39]. We explore based on our data, how active management does address the effects of social distance, habitus differences, and the required transfer of specific knowledge.
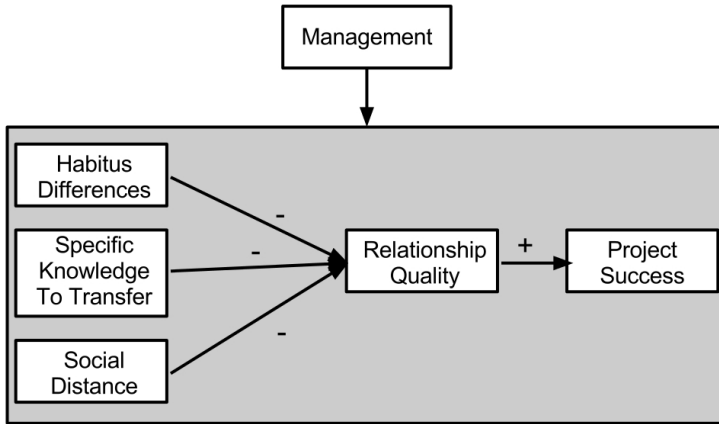
**Fig. 1.** General Structure of the Research Model

## 2.2   Transaction Cost Economics and Practice Theory

Our model is deduced from PT and TCE based on prior research. TCE states that production processes not only cause production costs but also transaction costs, e.g. for controlling external partners. Based on the behavioral assumptions of bounded rationality and possible opportunism, TCE suggests several transaction characteristics as contingencies of occurring transaction costs [40]: frequency, uncertainty, and specificity of assets and production sites. While findings in IS research on uncertainty are inconsistent and investigations into frequency or production sites are rare [11], asset specificity is of great influence in ISD. In particular, human asset specificity, i.e. specific skills and knowledge of the professionals involved, has proven great explanatory power [10]. However, findings on the effects of asset specificity in general are numerous, but not always consistent, either [27]. This highlights the need for further but careful research on asset-related aspects [25]. Therefore, we examine the effects of different amounts of specific knowledge that must be transferred from both theoretical perspectives, TCE and PT.

In contrast to TCE, the unit of analysis in PT is not an economic transaction but rather social interaction within grown social structures – so called fields of struggle [3]. These fields can vary in their nature from groups of individuals, such as ISD teams, to collective ones, such as the economic field in which the interacting parties may be organizations. Basically, PT suggests that all actors strive for domination in the fields of struggle they act in. Doing so, their status in relation to others is determined by the resources they dispose of. However, actors are not free in their struggle to acquire these resources. They are constrained by their current status in relation to others as well as by their learnt ways of thinking and acting, i.e. their habitus [14]. Thereby, TCE and PT implicitly agree on the assumption of bounded rationality. Moreover, what is regarded as

opportunistic behavior in TCE may be seen as a natural struggle for domination in PT. However, while TCE emphasizes the need of actors to safeguard themselves against opportunistic behavior, PT emphasizes behavioral constraints created by being part of fields of struggle and by having to rely on historically grown patterns of thinking and acting [14,37].

### 2.3 Detailed Model

**Relationship Quality and Project Outcome.** Investigating into the outcome of offshore ISD projects from an onshore partner's perspective, we build on the basis of a large part of prior contributions in this field [27,25]. In domestic IS outsourcing research, success from a client's perspective is usually measured along three dimensions [10]: satisfaction, realization of expectations, and performance. Prior research on ISD offshoring outcome has adapted this perspective for outsourced as well as for internal projects [15,9,27] and so do we. We examine the onshore partner's satisfaction with the project, the degree to which the goals of the offshoring endeavor are reached, and the quality of the solution provided by the offshore partner.

We further draw on relationship quality as a well established predictor of success in IS outsourcing and offshoring research [27]. It is defined as the degree of connectedness between the parties in order to achieve a specified goal [41]. Adhering to definitions by [18], we examine the parties' commitment, consensus, and trust in each other as aspects of relationship quality. Moreover, we include the work-related communication quality [30] in our analysis as it is an important requirement for successful collaboration across teams and an integral part of high quality IS offshoring relationships [28,18]. From a TCE point of view, a good relationship between onshore and offshore partner reduces their propensity for opportunistic behavior and thereby the occurring transaction costs [9]. From a PT perspective, having a good relationship means accumulating social capital so that all the actors can draw on it later [14]. We therefore propose:

(Proposition 1) The higher the relationship quality, the better the outcome of the project.

**Specific Knowledge to Transfer.** In offshore ISD projects, human asset specificity refers to the knowledge specific to the onshore partner. Such knowledge is known to its employees, but it is required by the offshore partner to develop the IS. It is knowledge about "unique work procedures and business processes as well as unique software systems" [11, p.339]. We examine three dimensions of this knowledge specificity as elaborated by [42]: technical, functional, and business process specificity. The effort the offshore partner and its employees must make to acquire this knowledge must be seen as a specific investment. TCE suggests that this results in a higher propensity of opportunistic behavior [40] which the partner has to safeguard against. TCE thereby suggests that the propensity of having a low-quality relationship is higher if a larger amount of specific knowledge must be transferred between the partners. However, once

the specific investment is actually made and the transfer is completed, it can even become a central pillar of the project's success [36] by demonstrating the offshore partner's commitment and increasing its capabilities. This is because integrating knowledge from the onshore partner becomes easier if there is already existing knowledge which has been gained from prior work with the same partner, industry, and technology [16]. Moreover, examining the mere specificity of the knowledge required to complete the project in general has produced inconsistent results in prior work [27]. We consequently take the offshore partner's prior exposure to this specific knowledge into account: we focus on the specific knowledge which actually needs to be transferred within the scope of the project.

From a PT perspective, employees of the onshore partner in possession of highly specific knowledge own intellectual capital, a valuable resource. Transferring this knowledge to the offshore partner means losing a source of power to the offshore partner staff and can reduce their status inside their own company [37]. Assuming constant struggle for domination, onshore partner staff are expected to oppose to this transfer, thereby reducing the quality of the relationship to their offshore peers. Moreover, working in a highly specific domain for years can influence the habitus of the onshore partner employees. For externals such as the offshore team members it can be hard to understand or even align to such a specific habitus. Consequently, we make the following proposition based on TCE and PT:

> (Proposition 2) The higher the amount of knowledge specific to the onshore partner which must be transferred to the offshore partner, the lower the relationship quality between the organizations and between the respective teams.

**Habitus Differences and Social Distance.** Based on PT, an offshore ISD project can be seen as an inter-organizational field of struggle encompassing all stakeholders who influence the project [29]. However, these actors are not exclusively active in this single field but also in a variety of others. This is assumed to influence their behavior in the project. Figure 2 outlines our assessment of fields of struggle in which, individual team members of the partner organizations act in [29]. On the one hand, there are fields of struggle all the individual team members are actors in, regardless if they are members of the one or the other partner. These fields are the project itself, the global labor market for ISD, and the field of global politics which encompasses all international political relations. On the other hand, there are fields of struggle, the employees of one of the partners are actors in while those of the other may be totally unaffected by them. Such fields are the national cultures, local labor markets, and the partner organizations themselves. Where actors are members in the same fields, PT suggests competition between them by means of resource accumulation [37,29]. At the same time, each actor has got a specific *habitus*, i.e., learnt ways of thinking and acting. This habitus develops during an actor's history in social fields [14]. It serves as a lens to interpret situations and provides a set of acceptable actions. Thereby, their habitus enables the actors to understand rules and rites

of a specific field and facilitates acting upon them. PT suggests, therefore, that habitus differences between actors, which result from their activities in different fields, reduce their understanding for each other. Consequently, we focus on two different properties of the two categories of identified fields: where onshore and offshore team members act in the same field, status differences in the form of social distance are emphasized; where they act in mutually exclusive fields, the differences in their habitus are emphasized.
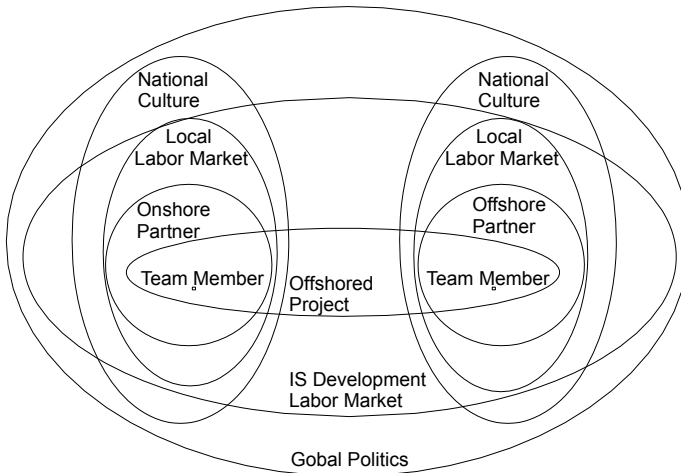


**Fig. 2.** Fields of Struggle for Individual Team Members

Status differences and competition have been found to create social boundaries between individuals, teams, and sub-organizations. They constitute key inhibitors of effective collaboration in ISD offshoring [31,29,20]. Especially their negative impact on knowledge transfer between partner organizations is emphasized in literature [2]. Moreover, an outstandingly dominant role of one group can cause dissatisfaction at the others and lead to increased personnel turnover [26]. *Social distance* refers to social boundaries between onshore and offshore teams due to resource inequalities and competition for resources in the single fields of struggle. For example, geographic and temporal separation of the teams can be used -typically by the onshore employees- as a source of power over the remote team in the project [31,29]. Moreover, exclusive access of onshore staff to business users reduces the attractiveness of the jobs of offshore employees [26] and can make them feel illegitimately dominated [29,5]. Perceived competition in the global ISD labor market can discourage onshore teams from collaboration as offshore locations strive for more high-value tasks [29,20]. At the same time, such competition can make offshore teams try to perform extraordinarily well in tasks that enhance their status [26]. On the other side of the coin, this can lead to underperformance in low-status work [37]. Finally, political frictions or hostile relationships in the recent history of the partners' home countries can

yield social boundaries and prejudices that impact IS offshoring relationships [30]. All in all, this leads to the proposition:

> (Proposition 3) The higher the social distance between the partners, the lower the relationship quality.

In contrast to social distance, habitus differences between onshore and offshore teams result from their memberships in a variety of mutually exclusive fields of struggle. This is consistent with current research stating that culture has many interacting layers which cannot be examined in separate [29,38]. Onshore and offshore partners can differ in their organizational culture, resulting in work practice differences that impact project success [34]. Moreover, local labor markets can shape team members' habitus differently, e.g. their general attitude towards turnover [26]. The most obvious habitus differences with strong impact on offshore ISD projects rooted in national culture are language differences. Moreover, while we acknowledge the general limitations of dimensional models of national culture, we take behavioral differences into account which are identified and traced back to different cultural dimensions in many studies of national culture dimensions [21]. In summary, we propose:

> (Proposition 4) The greater the habitus differences, the lower the relationship quality.

## 3   Research Methodology

We apply a qualitative, multiple-case study approach to scrutinize and further refine our model [32,12,43]. This research design is especially well-suited for questions dealing with new theoretical relationships such as in our case [7]. It does not aim at statistical significance but rather at analytical generalization [43, pp.35-39]. In order to substantiate and refine our research model, we analyze two cases for each of four clusters of projects: German onshore partners offshoring ISD projects to Chinese, Indian, Eastern European, and neighboring Central European offshore partners. Thereby we primarily intend to ensure an appropriate variance of project success [13] and configurations regarding the cultural background of the offshore partners. Especially the latter is not common in IS offshoring research which traditionally focuses on India [25].

Data were collected between late 2009 and early 2011 from nine interviews. Table 1 provides an overview of the single cases. For each of the eight cases (i.e., projects) one interview was conducted with a project manager (PM) or liaison manager (LM) of the onshore or offshore partner. These key informants were chosen because we considered them to have the best understanding of the projects as they oversaw and coordinated teams of both onshore and offshore partners. Increasing the number of cases rather than the number of interviews per case allowed us to gain a larger variety of projects regarding our propositions. This practice is consistent with current IS research [24]. In only one case (WFM1), a second interview with the head of project management was necessary to gain

a comprehensive overview of the project in addition to an interview with the liaison manager. The semi-structured interviews followed guidelines composed along the constructs and propositions presented above. The average duration of the tape-recorded interviews was 87 minutes resulting in 278 transcribed text pages which were structured and coded using the qualitative research software NVivo.

**Table 1.** Overview of Cases

|  | BIS1 | DEVICE1 | BIS2 | WFM1 |
|---|---|---|---|---|
| Country | China | China | India | India |
| Offshore Partner | internal, SBU of common parent company | joint venture with Chinese firm | internal, SBU of common parent company | external supplier |
| Project Type | care & extension of ERP/SCM software for external client | development of SW for a medical device | care & extension of ERP/SCM software for internal client | development & testing of domain-specific workflow management system |
| Team Size | 40 | 50 | 20 | 80 |
| Duration | 2 yrs* | 2 yrs | 1 yr* | 4 yrs* |

|  | TELCO1 | TIME1 | PUB1 | SALES1 |
|---|---|---|---|---|
| Country | Russia | Belarus | Poland | Czech Rep. |
| Offshore Partner | external supplier | external supplier | external supplier | external supplier |
| Project Type | testing of proprietary customer care & billing SW | extension of proprietary SW | extension of public service standard SW | migration of sales SW for financial services provider |
| Team Size | 4 | 3 | 20 | 10 |
| Duration | 6 yrs* | 1 month | 9 months | 5 yrs |

* ongoing at time of data collection

All responses to questions addressing our constructs or management practices were coded by the first author. The resulting codings were scanned for statements about the single dimensions of our constructs, allowing us to rate their presence and salience in the cases on a low-medium-high scale. Statements that included causal linkages of single constructs to others were also coded and taken into account to increase internal validity [32, p.144]. The validity of the codings was controlled by the second author who assigned the references contained in a sample of two cases independently to the list of codings. This resulted in an average agreement of 98.44%. Where the opinions did not match, the authors discussed the discrepancies and could easily resolve them. Based on the salience ratings and codings, the patterns found in each case were matched against the research framework comparing predictions and evidence. Where they did not match, we explored the codings for reasons. As a result of two iterative explorations [43, p.143], the management practices "boundary spanning" and "offshore partner empowerment" were identified. Through a detailed further analysis of codings

and ratings, we realized that there are interaction effects between the required transfer of specific knowledge and habitus differences as well as social distance. This finally led to the refinement of our model as shown in figure 3.

## 4    Empirical Results

The data gathered during the interviews were coded following the procedure described above. As a first step of analysis, we examined all causal statements [32, p.144] if any of them explicitly contradicted our propositions. No such references could be found. On the contrary, we found at least one statement per proposition explicitly confirming single aspect, e.g. in the following social distance in the forms of labor market competition and competition for resources such as access to users (proposition 3) in cases DEVICE1 and SALES1:

*"They are full of fear. If I build up a new location in China, the colleagues naturally get frightened. [...] And therefore, initially there is actual skepticism about Chinese colleagues."* (PM DEVICE1)

*"[...]when we had to teach the colleagues in the nearshore center: the responsibility of customers resides in Germany! Customer contacts are in Germany! You are our service provision!"* (LM SALES1)

As a second step, we rated the overall outcome measure based on the onshore partners' satisfaction, the realization of expectations as well as the solutions' performance. Subsequently, we created the salience ratings for the rest of the constructs as described before and matched them to our model. Table 2 depicts the ratings for the single constructs.

**Table 2.** Salience Ratings for the Single Cases

| Var/Case | BIS1 | DEVICE1 | BIS2 | WFM1 | TELCO1 | TIME1 | PUB1 | SALES1 |
|---|---|---|---|---|---|---|---|---|
| Spec. Know. | L | H | L | M | H | L | M | L |
| Habitus Diff. | M | H | L | M | L | M | M | L |
| Social Dist. | M | H | L | M | L | L | M | H |
| Rel. Quality | M | L/M** | H | M | H | H | M | M |
| Outcome | H | L/M** | H | L | H | M | H | M |

** different results for two departments

### 4.1    Proposition 1: Relationship Quality and Project Outcome

We found first support of proposition 1 based on the salience ratings. In general, higher values of relationship quality appear to go hand in hand with better project outcomes. In all cases, the interviewees reported of relational aspects between the partners that had been key to project success. On the one hand, the relationship between the partners' teams, especially their trust in each other and their willingness to reach consensus was emphasized frequently. On the other

hand, a smoothly working relationship on a management level was found equally important. In BIS2, for example, the maintenance and further enhancement of a standard business software was handed over from a German business unit of a large IT service provider to its Indian sibling. There had been a well established working relationship between the teams long before the project started. A special emphasis was on the trust the teams had already gained in each other and the personal contacts that were in place. This was true on a team level as well as on a management level.

> *"At the moment it is actually working very well. The Indian team is very responsive and very responsible. That is also because we have got a very good project management at the site down there and a very tight cooperation between the German and the Indian project managers."*(PM BIS2)

Investigating into the the two cases WFM1 and TIME1, in which the outcome was worse than would be expected based on the relationship quality, we found that the onshore partner's dissatisfaction resulted from failures of activities which were independent from the offshore partner. Proposition 1 is therefore supported by the case data.

> *"[...] like system architecture and feature decisions. All of those are things, in the end, that we ourselves screwed up in the headquarter."*(Head of PM WFM1)

### 4.2    Proposition 4: Habitus Differences

The theoretical discussion suggested that differences in the teams' learnt ways of thinking and acting would impact the relationship quality between them. And, indeed, all projects faced such differences, albeit their different intensities. Across the single cases there was a high variance of habitus differences which could partially be traced back to differences in national culture. However, as theory suggests, there are strong overlap effects between the single fields of struggle which in their sum lead to the habitus differences that lower the relationship quality. As a result, there are not always strong impacts of habitus differences between German and Indian, and not always weak effects with neighboring European offshore partners. This is illustrated based on the cases PUB1 and BIS2.

Unsurprisingly, cultural differences were perceived to be more intense the farther the partners resided from each other. For example, in PUB1, the German onshore partner outsourced the customization and extension of a standard software product in the public services sector to an external supplier in Poland. The perceived distance regarding national culture was existent but not extremely high as many employees of the offshore partner had quite a lot of experience with German clients and many of them even spoke German. Nevertheless, communication with the German partners who often did not speak English was not always successful at the first try but the understanding for each other grew during the run of the project. Informal communication between onshore and offshore

partner employees was, when given the opportunity, possible without problems and furthered this understanding. Aside from the national culture, the organizational cultures of the partners differed strongly. The onshore partner was a public services company used to rather bureaucratic practices and fix working hours from early morning till the afternoon while the offshore partner's employees enjoyed their flexibility and did work on quite a different schedule, starting and ending daily work much later. These organizational differences were one of the central drivers for extra efforts made by the client to coordinate onshore and offshore work. Consequently, the client felt there was practically no cost reduction in comparison to the project being conducted in Germany but as its major goal was flexibility and not lower costs, PUB1 was rated to be quite successful.

In BIS2, in contrast, the Indian and German culture were acknowledged to differ strongly, but the existing relationship between the partners had fostered a mutual understanding and created trust in the behavior of the partners. Moreover, as the project was offshored internally to a different business unit of the common parent company, standardized procedures, working practices, and roles were in place which left less room for misunderstandings and disagreement about responsibilities. In summary, this similar habitus was seen as a key source of project success and enabled them to "deliver high value from the start" (PM BIS2).

### 4.3    Proposition 3: Social Distance

We found broad support for our proposition that social distance reduces the partners' relationship quality. The most common form of social distance we observed was rooted in the labor market of ISD. The onshore partners' employees slightly feared for their jobs in several cases while the offshore partners tried to gain new competences. Where no managerial action was taken, this had the potential to create grave disruptions in their relationship. However, competition for status and resources did not only take place in this area. We observed social distance at least also in the project as a field of struggle and the field of global politics. Where social distance arose, it radically reduced consensus between the teams and trust in each other was lost. We observed social distance as being rooted in one single field of struggle but spilling over into the common project when the competition became salient. We substantiate these findings along the cases SALES1 and BIS1.

In SALES1, a financial services institution wanted to migrate and update a legacy sales system to a new platform. For technological reasons, the entire software had to be reengineered and coded on the new platform. A first try to do this in the internal IT department had failed and led to the decision to outsource the project. The service provider developed the system in the Czech Republic following a specification created by the customer in close collaboration with its onsite liaison manager (LM). However, the decision to outsource SALES1 had not been made to the full agreement of the internal IT department. The decision meant a reduction of resources for the internal IT and thereby potentially reduced its status within the firm. Moreover, employees who had formerly been

working on the development of the IS were shifted to specification tasks for SALES1 and not all of them agreed with this change. In combination, this led to a high social distance on operational as well as managerial levels, reduced consensus and trust, and finally required escalations.

> *"The departmental manager made them feel it in every single meeting. He did not like it at all that he did not see the people and did not have them onsite. His department looked so small. [...] And there were situations when we had to say, they were boycotting it. In the end, I had to call in the board."*(LM SALES1)

In BIS1, maintenance and add-on development tasks for an existing IS, namely an enterprise resource planning and supply chain management standard software, were offshored to China internally by a large IT services provider. These services were part of a new outsourcing contract with an external client who had not had any contacts with the offshore partner on a project level before. Although the developed add-ons were rather simple and "maintenance-related", as the liaison manager said, several issues came up during the project. The client had several problems with the new formalism of the outsourced tasks, language differences, and personal conflicts between onshore and offshore employees. Nevertheless, the offshore partner demonstrated professionalism and good knowledge of the offshored standard systems and the partner's target industries in the end. The desired cost reduction was achieved. However, the spillover of social distance from the field of global politics to the project as a field of struggle could not have been more illustrative: political relations between China and several Western countries temporarily worsened due to the Westerners critique on China's internal politics during the 2008 Tibetan unrest. This tense atmosphere spilled over and the personal relationships consequently suffered radically from prejudices of the German and emotional reactions of the Chinese side:

*"[. . .] during the Chinese incursions, there were loads of e-mails from the [Chinese] colleagues in which they drew the attention to content-related errors in the reporting [of German peers]."* (BIS1 informant)

It was also pointed out that the image of China in Germany was negatively impacted by media and politicians, who heavily criticized China for the restriction of civil liberties. These frictions and a high perceived labor market competition created a social distance between German and Chinese staff which hampered collaboration with Chinese partners in such occasions stronger than with other partners. This might be rooted in the field of global politics as Western social and economic systems are perceived to compete with the Chinese one and this competition is reinforced by politics and media.

## 4.4   Proposition 2: Specific Knowledge to Transfer

Regarding the specific knowledge to transfer, we found only partial support for the proposed direct effect on relationship quality. The projects in which only relatively low levels of specific knowledge had to be transferred to the offshore

partner did show overall high to medium quality relationships, which is in line with our prior discussion. However, examining the codings related to this aspect more closely, we found that only few of the onshore partners actually perceived a negative influence of the amount of knowledge to transfer on the relationship with the offshore partner. What we saw instead was that offshore partners were selected in a way that minimized the amount of specific knowledge which had to be transferred. As an example, it was the objective of TIME1 to quickly develop an easy work time reporting system which had to be integrated into an existing legacy platform for project management. There were only few aspects of specific knowledge with respect to business processes or technologies in the project. However, the task required quite a deep understanding of the legacy software. As the offshore partner had been working with this system before and even had developed parts of its current state, the offshore partner was chosen based on this accumulated knowledge and the certainty that the project team members offshore would be the same as in the project before. The knowledge transfer during TIME1 was consequently quite low and the relationship was not impacted.

> *"Only the one who also participated in developing the software has any chance to create extensions quickly and at a good price."*(LM TIME1)

Interestingly, we found no evidence supporting the view that fear of opportunistic behavior on an organizational level influenced the partner selection or the relationship in any of the analyzed projects. We checked this by examining the informants' statements about trust in the offshore partners' adherence to the contracts and in its organizational actions. Instead, we found that throughout most of the cases the managers emphasized on habitus differences and aspects of social distance being decisive for a failed transfer of knowledge specific to the onshore partner. The major impact of specific knowledge that must be transferred, therefore, appears to result from interaction effects with habitus differences and social distance rather than from a direct effect. In the following, we substantiate this finding based on the projects TELCO1 and DEVICE1.

TELCO1 was aimed at testing a customer care and billing software which was being developed by the onshore partner, a large telecommunications company. The offshore team of an external provider in Russia was in charge primarily of regression testing and only to a low degree of testing new functionality. However, there were many internal inter-relations between the single systems that had to be tested. Testing functional chains through up to 20 custom-developed sub-systems required a substantial understanding of the onshore partner's system landscape and intense contacts to the onshore software developers. The onshore partner's liaison manager emphasized that there was no general problem in transferring this knowledge as long as people were willing to cooperate and capable of understanding each other. In reaction to initial reservations on the German side, the onshore partner had years ago moved skeptical employees from the project and had even fired one strong opponent of the relationship. The then remaining client employees on the project had a good personal relationship

with the relatively stable offshore team and were collaborating successfully with them without much social distance. Interestingly, the onshore liaison manager mentioned that the improvement of the political relations between Russia and Germany enabled the teams to have discussions on politics and improve their interpersonal relationships. It was further highlighted that cultural similarities were outstanding in TELCO1 and the transfer of specific knowledge in other projects had been much harder than with this offshore partner due to similarities in organizational and national cultures. In the early days of TELCO1, the teams had developed implicit common norms such as speaking up early when discovering problems not in the scope of one's task. These habitus similarities were reinforced within the teams; when new colleagues joined the team, other offshore team members mentored them and introduced them not only to technical details but also to the project culture so that they could gain the relevant knowledge from the onshore partner more easily.

In the scope of DEVICE1, an ISD department was built up in a Chinese-German joint venture. The goal was to support the German onshore partner in developing software for a medical imaging device. This task required highly specific knowledge regarding the applied image reconstruction technologies, legislative regulations for such medical devices, clinical processes, and the existing code base of more than five million lines of code. The offshore team primarily consisted of recently graduated developers without prior work experience or relations to Germany. Many employees of the onshore partner were very critical and actually feared for their job while nearly none of them had ever worked with Chinese colleagues before. The huge quantity of highly specific knowledge that had to be transferred reinforced the present habitus differences and also increased the impact of the social distance between the teams.

> *"[...] and they say: if you cannot make it, we'll give it to Chinese colleagues, they will make it. [...] And here comes a Chinese colleague fresh from school [...] and he is sitting there with a German developer who has been working for [HEALTHCARE COMPANY] for 15 years, ten years in the same software component. A freshman and an experienced developer who does not want to talk to him. That makes it hard to come closer. So the trouble is always on a human level, never on a technical one."*(PM DEVICE1)

To close this enormous gap, an extant training for the offshore employees was provided including several months stay in Germany. By two involved onshore departments, the outcome of this project was seen very differently. One of them approached the new relationship openly, supported the developers to establish personal contacts, and transferred responsibility from the beginning. In connection with visits of onshore partner staff and the German head of the offshore partner's software department tightly controlling all communication between the sites, this led to a good relationship, reduced prejudices, and finally caused a positive outcome of the project from this department's point of view. On the other hand, by the second department, the relationship was not seen as a success at all.

*"The other department has actually been collaborating with the Chinese colleagues for a much longer time. However, its management has strong reservations. It is very skeptical. And although the department [in China] has been existing for nearly four years now, there are still frictions and skepticism of the employees here in Germany."* (PM DEVICE1)

## 4.5    Boundary Spanning and Offshore Partner Empowerment

The further inspection of the data revealed that two management practices were emphasized by the respondents across the cases, which were especially present in the positive sub-case of DEVICE1 and could explain how a moderately good relationship could be built despite such negative antecedent. Table 3 provides an overview to which intensity these practices were applied in the single cases. In general, the more successful cases in which social distance or habitus differences were present relied on at least one of them.

**Table 3.** Salience Ratings for Management Practices

| Var/Case | BIS1 | DEVICE1 | BIS2 | WFM1 | TELCO1 | TIME1 | PUB1 | SALES1 |
|---|---|---|---|---|---|---|---|---|
| Empowerment | H | L/H** | M | M | H | L | M | L |
| Boundary Span. | L | L/H** | M | M | H | M | H | L |

** different results for two departments

For example, these practices were present in WFM1 where a complex domain-specific workflow management system was developed by a German client and an external Indian supplier. In the beginning, the Indian offshore partner was mainly engaged in single testing and development tasks but received increasing responsibility for test strategy and management. This change corresponds to the first management practice, the empowerment of the offshore partner, i.e. the transfer not only of work but also of responsibility:

*"There is a basic level of trust in the partner you have to bring up a priori. It will not work without that. The decision [to offshore to India] has been evaluated more positively with more independent responsibility assigned to our partner."* (Head of PM WFM1)

This empowerment had several effects. Transferring delimited work packages and attaching the respective responsibility to them led to a situation where responsibility and work resided at the same site. This reduced the need to control and coordinate all the single activities across geographic and temporal boundaries. Moreover, the collaboration between onshore and offshore partner teams was thereby reduced, also mitigating the influence of social distance as there was less chance for frictions caused by perceived competition.

*"[. . .] they were suddenly at 120 % of the German productivity. That was because of the independent responsibility and consequently because of the lower overhead for international communication and also because*

> *our development team [size] had shrunk [...] This was what decreased interaction complexity."* (Head of PM WFM1)

Transferring responsibility also leads to a reduction of the power imbalance between onshore and offshore partners. Moreover, it allows the onshore partner to clearly communicate that strategically the responsibility for certain tasks lies offshore while the responsibility for others - and the attached jobs - will stay onshore. Finally, it becomes easier to define clear interfaces and to reduce the number of communication channels that are prone to negative impacts of social distance between individuals. In sum, this practice aims at reducing cross-site collaboration and overhead for managing social distance.

The second important management practice we found is boundary spanning, i.e. the intent to improve the personal relationships between onshore and offshore team members in order to yield more effective collaboration. Different strategies were applied in differing intensities in the cases. The most common practices of boundary spanning are visits at the partner's site which can differ in frequency, duration, and the range of participants. Cultural trainings constitute a second type of boundary spanning which can also vary along the same dimensions. Moreover, individuals rooted or experienced in several cultural fields can act as individual boundary spanners like the liaison manager in WFM1, who was Indian by nationality but lived and worked in Germany. Boundary spanning had three major effects on the projects: first, the cultural differences between the team members were decreased as they learned to know the environment their colleagues were working in, their behaviors, their work practices, in short, their habitus. Second, the offshore employees gained experiences with the onshore partner, its processes, and its systems. This reduced the influence of habitus differences especially in cases where there was a high amount of specific knowledge that had to be transferred. Third, the social distance between the teams was reduced as the team members established personal connections, re-thought prejudices, and grew a feeling of collaboration rather than competition. Consequently, figure 3 depicts the research model that is refined with these findings.

## 5    Discussion

Prior research has highlighted issues in IS offshoring projects arising from differences in the learnt ways of thinking and behavior [35,6], from status differences and resource inequalities [29], as well as from asset characteristics [11]. We were able to integrate these three perspectives based on TCE and PT into a single coherent framework. Whilst doing so, PT provides us with a dynamic concept of culture comprised by many interacting and constantly evolving layers. We proposed an integrated research model and substantiated it in a multiple-case study with German onshore partners and different sets of offshore partners. We thereby increase the necessary cultural variety in IS offshoring research and take important environmental factors such as the attitude towards different countries
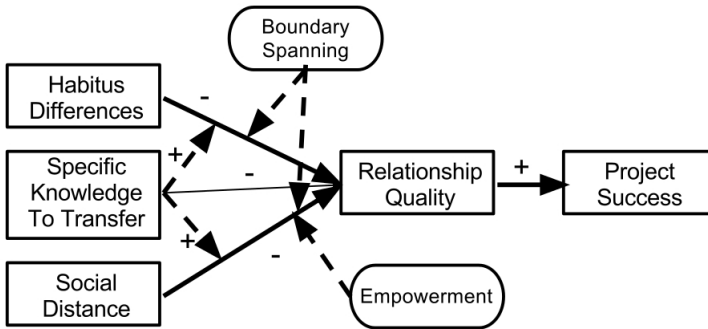
**Fig. 3.** Refined Research Model

based on global politics into account [25]. Indeed, we found that social distance between Chinese and German employees was often rooted in conflicts in global politics and accompanying prejudices while this was seldom the case in Indian projects and not found at all with European partners. Moreover, our findings indicate that cultural differences might be lower with European offshore partners, but habitus differences from other fields such as the organizational culture can easily arise and be as grave as the former.

Moreover, we found two management practices which moderated the negative influences of social distance and habitus differences: boundary spanning and offshore partner empowerment. Boundary spanning and its effects on the project outcome have been addressed in research before [29] and it is usually found in all offshore ISD projects, albeit different intensities. It allows for reducing habitus differences by creating a common understanding of the project and its actors. Thereby boundary spanning mitigates the perceived distance between them and can consequently lead to a reduction of other management efforts as well as a better relationship [9,23,1]. The empowerment of the offshore partner with more responsibility for delimited work packages creates the possibility of establishing a restricted number of clear roles and communication partners, which has been found to improve project success before [41]. Prior research on the empowerment, however, is inconsistent. Some scholars argue that high quality relationships include more shared responsibilities [17, p.137], others find the opposite [28]. Our findings suggest that there are two contingency factors that might explain these inconsistent results: such empowerment is appropriate when there is a social distance between the teams and a substantial amount of specific knowledge must be transferred. Reducing the points of contact in such cases, the empowerment can have an appeasing effect on the struggle for resources between the teams: clear communication of specialized responsibilities can reduce competition for the same jobs and balance status inequalities while at the same time allowing offshore partners to attract high-value work in their area of specialization [8].

Finally, this paper contributes to research in IS offshoring by examining the influence of specific knowledge to transfer on the relationship quality and project outcome. We find only partial support for proposed direct impacts on relationship quality. However, we cannot find any hints indicating opportunistic behavior or safeguarding against it on an organizational level as suggested by TCE. Instead, we find that the amount of specific knowledge to transfer primarily amplifies the negative impacts of habitus differences and social distance on the relationship quality. Moreover, TCE suggests that specific knowledge to transfer should create more issues in terms of managerial effort in cases where the offshore partner is an external provider. However, we find that the threat for the onshore partner's jobs perceived on an individual level (e.g., in DEVICE1) can be even higher when an inhouse offshore location is built up and the responsibilities are not clearly separated. As a consequence, the onshore employees' reaction of using the specific knowledge as a precious resource and weapon in cases with high social distance impacted the projects much stronger than organizational level effects. In sum, we do not find support for the reasoning of TCE, but we find strong support for the one of PT. The interaction effects we propose might be one reason why findings on asset specificity have not always been consistent in IS outsourcing research [27].

## 6    Limitations and Future Research

Our findings are based on a restricted number of interview-based case studies which reduces generalizability. Future research could build on our findings and test them in larger and broader studies across different cultures including more varied data sources. Moreover, future research should elaborate on how the identified management practices can be applied in different settings. For example, the empowerment of the offshore partner might be appropriate for strategic partnerships but not for short-term outsourcing contracts.

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