VINAY TIWARI

Transition Process and Performance in IT Outsourcing

Evidence from a Field Study and Laboratory Experiments

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Bewijs op basis van een veldstudie en laboratoriumexperimenten

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To my (extended) family
and friends

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Vinay Tiwari

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1 INTRODUCTION

In today's highly networked economy, organizations are constantly engaged in developing relationships with each other to create value and gain a competitive advantage. The era when a largely monolithic entity could survive is long gone, now organizations cannot afford to create profitable products and services without substantial, and in many instances, global partnerships. In the contemporary media, this phenomenon is referred to by several labels, such as the flat world, the great unbundling, and globalization (Economist, 2007, 2009; Friedman, 2005) – each highlighting specific features of this revolutionary trend. Building on the foundation of a more networked business environment, scholars are predicting and witnessing scenarios in which partnerships are formed and business is conducted through "a rapidly formed network with anyone, anywhere, anytime regardless of different computer systems and business processes" (Vervest et al., 2004; van Heck and Vervest 2007: 29, 2009). Several developments have fuelled this new paradigm, including the recent advancements in information and communication technologies (Malone et al., 1987; Cairncross, 1997; Shapiro and Varian, 1999) and increased modularization and standardization of products and related processes (Sanchez and Mahoney, 1996; Baldwin and Clark, 1997).

The necessity to form these relationships is fuelling an aggressive growth in the number of interorganizational relationships (IORs), which can emerge in various forms, including, strategic alliances, networks, supply-chains and outsourcing deals (Barringer and Harrison, 2000). In order to comprehend the growth of IORs, consider for instance, that the average number of strategic alliances by leaders in almost every industry ranges from around 60 to 100 (Dyer et al. 2001; Bamford and Ernst, 2003). Steinhilber (2008), VP of Strategic Alliances at Cisco Systems, suggests that over 2000 strategic alliances, involving two or more firms, are launched globally every year with a 15% annual growth rate. Although these statistics are impressive, assuming that all alliances will yield value could not be farther from the truth. In fact, over half of these alliances fail (Corporate Strategy Board, 2000; Bamford et al., 2004). It seems paradoxical that on one hand, IORs are growing fantastically but on the other hand, the majority of them are unsuccessful (Kale and Singh, 2009). To determine the reasons behind this trend, we need to understand more about IORs.

Ring and Van de Ven (1994: 97) suggest that the development of an IOR proceeds in "a repetitive sequence of negotiation, commitment, and execution stages". Although each stage carries the risk of failure, we focus specifically on the execution stage as it is extremely challenging, has a significant influence on the relationship success and is usually underestimated. In the execution stage, "the commitments and rules of action are carried into effect" (1994: 98) or in other words, the relationship is operationally implemented. Van Heck and Vervest (2007: 34) suggest that organizations must "quickly connect and disconnect" with various partner firms to gain a competitive advantage, but as much as organizations might strive to quickly connect with each other, these connections are impossible to establish overnight and usually take much longer than expected, due to the

complications in executing them. Even after completing cumbersome financial and strategic due diligence activities, execution of the relationship can be filled with unexpected challenges (Park and Ungson, 2001). Furthermore, during the initial two stages, critical financial and strategic issues such as contractual agreements (Bamford et al., 2003; Ernst, 2003), goals and objectives (Doz, 1996; Kale et al., 2000), and partner selection (Ireland et al., 2000; Das and Teng, 2003) take precedence, while execution is largely underestimated or ignored (Park and Ungson, 2001). The literature on IORs demonstrates the challenges encountered during execution (or operational implementation) such as sharing or transferring knowledge and coordinating activities etc. (Park 1996; Larsson et al., 1998; Moller and Halinen, 1999; Simonin, 1999; Ballou, 2000) while underscoring the significance of the execution stage in developing successful relationships.

Within the strategic alliances literature, for instance, Anand and Khanna (2000: 295) refer to the CEO of Emerson Electric suggesting that implementation or execution is the "graveyard of strategic alliances". For successfully managing an alliance and realizing its value, Kale and Singh (2009: 50) highlight the importance of handling conflicts and coordination problems, which refers to "the difficulties of aligning actions between partners" during implementation. These problems can arise "even when partners' interests are fully aligned" and can be traced to insufficient knowledge of interdependencies and decision-making rules (2009: 50). Within the inter-firm networks literature, for instance, Dyer and Nobeoka (2000) show that effective knowledge-sharing routines and coordinating principles can lead to superior network performance. Within the supply-chain literature, for instance, Monczka et al. (1998) found that managing coordination, interdependence and information sharing have a significant positive influence on buyer-supplier relationships. Several scholars suggest that effective coordination during execution is fundamental to the success of supply-chains (Lee and Bellington, 1992; Cachon 2003; Monczka et al., 2008). Moreover, in a study of 80 Fortune 500 firms, Ellram (1995) found that a lack of coordination and poor communication was the primary reason for the failure of buyer-supplier relationships. Within the outsourcing literature, for instance, scholars have shown that managing coordination, communication and control during execution is critical for relationship success (Lee and Kim, 1999; Choudhary and Sabherwal, 2003; Sabherwal, 2003). Furthermore, knowledge transfer or knowledge sharing during outsourcing have also been found to have a significant impact on relationship success (Kotlarsky and Oshri, 2005; Dibbern et al., 2008; Lacity and Rottman, 2008; Hirschheim et al., 2009).

To summarize, we find that relationships between organizations are growing enormously yet the benefits from such relationships are difficult to realize. We state that the potential for value creation from these relationships is inhibited by the challenges in executing or operationally implementing the relationship. Therefore, in this dissertation, we focus on the execution of IORs. Among the several prevalent forms of IORs, information technology (IT) outsourcing is chosen as the context for this dissertation for two reasons. First, the IT outsourcing phenomenon, including offshore IT outsourcing, exhibits the paradox of extreme growth accompanied with high failure rates (e.g. Lacity and

Willcocks, 1998; Levina and Ross, 2003; CIO, 2007a). Second, my previous professional work experience of over 2.5 years within the IT outsourcing industry equipped me with a better understanding of IT outsourcing relationships as compared to other forms of IORs.

IT outsourcing refers to contracting certain (or all) activities related to an IT function, such as, software development, testing and maintenance etc., to an external vendor (Loh and Venkatraman 1992). An IT outsourcing relationship can be broadly divided into six stages (Figure 1.1) – initiation, vendor selection, contract negotiation, transition, service delivery and contract renewal/termination (adapted from Lacity and Willcocks 2000). While the first three are pre-execution stages, the fourth and fifth stages of transition and service delivery represent execution stages; followed by the post-execution stage of contract renewal/termination. Among the two execution stages, we specifically focus, in this dissertation, on the transition stage for the reasons stated in the next section. More specifically, the transition stage is defined as a stage with a limited duration in which knowledge, experiences and routines related to the outsourced activities are transferred from client to vendor personnel. The knowledge, experiences and routines transferred serve as the foundation for delivering services throughout the contractual duration.

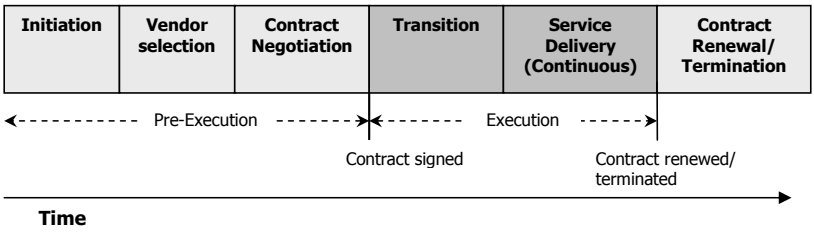


Figure 1.1 Outsourcing Relationship Lifecycle

1.1 Why study Transition during Outsourcing?

We study the transition stage of an IT outsourcing relationship[1] for three reasons: its significance for outsourcing success, its complexity and theoretical richness, and the limited current understanding in the literature. First, industry sources claim that two-thirds of all failed outsourcing relationships can be traced back to transition (CIO, 2007b), suggesting that it has a strong influence on the success of an outsourcing relationship. This is because transition includes the first joint operational steps amid the uncertainty that follows immediately after contract signing and involves the critical but time-constrained knowledge transfer period (Oshri et al., 2007; Carmel and Tjia, 2005).

Second, transition represents a complex stage as it comprises activities, such as transferring outsourced tasks, people and technology from client to vendor; jointly developing and implementing post-contract governance frameworks; and restructuring at the client firm (Lacity and Willcocks, 2000;

[1] Although several forms of IT outsourcing relationships exist such as application development and maintenance, infrastructure management, application service provision and IT-enabled service provision. In this dissertation, we focus on the first form because it is the most common form.

Cullen and Willcocks, 2003; Sparrow, 2003). These activities make transition theoretically rich and interesting to research and practically challenging to perform.

We conducted a preliminary study[2], which although focuses on the service delivery stage (later part of the execution, see Figure 1.1) but still highlights the possible complications and challenges involved with performing transition in a globally distributed setting. This study shows that several instances of misunderstandings, among distributed team members, still persist during execution even after an outsourcing relationship has been operating for a substantially longer period (over four years in this study). It suggests that these misunderstandings occur due to knowledge and experience asymmetry (existing among team members) and task characteristics (such as its complexity, novelty, ambiguity and instability), and are resolved by adopting socio-cognitive acts and processes related to sensemaking. While demonstrating the challenge of developing shared understandings, four years into the service delivery (a relatively stable-state), it allows us to imagine the scale of possible misunderstandings, with the potential to disrupt outsourcing relationship, immediately after contract signing i.e. during transition (a turbulent-state). Furthermore, several exploratory discussions held with the client, and vendor IT personnel, and IT outsourcing consultants revealed that challenges during the transition stage are under-estimated along with a significant concern that the stage mostly takes longer than expected (i.e. actual duration exceeds planned duration in the majority of instances). Cullen and Willcocks (2003: 151) support this observation by stating that the transition stage "begins at contract commencement and ends on a specified date or by signing of transition acceptance form…but irrespective of the official start and end dates, the transition actually begins much earlier and ends much later, and if not managed properly may not end at all". This observation, along with the findings from the preliminary study, provided us with substantial motivation and direction to examine the initial part of execution (i.e. transition) comprehensively.

Third, despite being a critical stage in an outsourcing relationship, the current understanding of transition is poor due to the limited academic attention it has received. While the majority of the prior research on outsourcing seeks to explain its formation (i.e. *why* organizations outsource) (see e.g. Ang and Straub, 1998; Poppo and Lacity, 2002; Seddon et al., 2007); literature focussing on *how* organizations outsource has been focussed on stages other than transition, for instance, initiation such as objectives or goals (Kern and Willcocks, 2000); vendor selection such as selecting appropriate partner (McFarlan and Nolan, 1995; Michell and Fitzgerald, 1997; Barthelemy, 2001), contractual negotiation (Lacity and Willcocks, 1997; Saunders et al., 1997; Kern et al, 2002) and service delivery such as managing coordination and control (Choudhary and Sabherwal, 2003; Sabhwerwal, 2003). Therefore, these three reasons lead us to focus on transition in an outsourcing relationship.

[2] This study was done as a part of my MPhil thesis and its modified version is published in *MIS Quarterly*, Special Issue on IS Offshoring, as Vlaar, van Fenema and Tiwari, 2008. All authors contributed equally to this study.

1.2 Research Objective and Questions

The research objective of this dissertation is to advance our theoretical and practical understanding of transition in outsourcing, thereby contributing to the knowledge on the execution of an IOR. To do so, this dissertation includes three empirical studies on transition using two complementary research methodologies (a longitudinal field-study and laboratory experiments). First, due to the limited availability of academic literature on transition and the theoretical richness of the phenomenon, we must begin our investigation by examining transition in detail, in an actual IT outsourcing relationship. Therefore, we adopt an in-depth, longitudinal field study of a real-life IT outsourcing engagement capturing transition as it unfolds over time. This is presented in Chapter 4 and focuses on the research question:

RQ 1: *How does transition proceed during outsourcing, and why?*

In this study, we develop and explain a process model of the transition stage (i.e. how the end-state of transition leading to the beginning of service delivery is achieved). It consists of three phases: *transfer, adapt and routinize*, along with the triggering conditions, key activities and outcomes related to each phase. This model illustrates transition as a culmination of organizational processes related to transferring, using and integrating knowledge, experience and routines and therefore, builds on theoretical concepts from knowledge management, organizational learning, organizational change and outsourcing literature.

Second, building on the insights and findings from the longitudinal qualitative field-study (Chapter 4), we closely examine the transfer phase, which acts as the most fundamental and consequential phase that determines the success of not only transition, but also the overall outsourcing relationship. It involves transferring knowledge, experiences and routines related to outsourced tasks from the client to vendor organization forming the basis on which the relationship is established. To rigorously determine the influence of this phase on transition performance, we must study it under highly controlled conditions. Therefore, we design a novel experiment that captures outsourcing and transition scenarios in the laboratory. Using this experimental setup, we focus on understanding the relationship between transfer mechanisms (i.e. methods used to transfer knowledge, experiences and routines) and transition performance. This is presented in Chapter 5 and focuses on the research question:

RQ 2: *What influence do transfer mechanisms have on transition performance, and why?*

In this study, we select the three basic and most frequently used transfer mechanisms – observation, training and manual. To explain the relationship between transfer mechanism and transition performance, this study utilizes the concepts from the literature on knowledge transfer, organizational

learning, and information and media richness. We find that among the three mechanisms, for a moderately complex task, observation leads to the best performance and manual produces a large variation in the performance.

Third, building on the findings from the first set of experiments (Chapter 5), we focus on strengthening the generalizability of these findings and determining any moderating influences. Insights from the previous study reveal two important variables with potential moderating influence on the relationship between transfer mechanisms and transition performance; these are codification and task complexity. Therefore, by using the same procedure, but modifying certain experimental settings, we investigate the possibility of moderating effects. This is presented in Chapter 6 and focuses on the research questions:

> **RQ 3a:** *Whether and why codification moderates the relationship between transfer mechanism and transition performance?*

> **RQ 3b:** *Whether and why task complexity moderates the relationship between transfer mechanism and transition performance?*

In this study, we introduce another transfer mechanism, modified manual, which involves adopting better codification practices – expected to improve transition performance. We also reduce the task complexity (hence, using low and high task complexity scenarios) to determine its effect on transition performance. Again, by using the concepts from the literature on knowledge management, organizational learning and information processing, we explain the influence of these variables on transition performance. Both codification and task complexity are found to have a moderating influence, thereby, further improving our understanding of transition.

1.3 Contribution

This dissertation makes three academic contributions. First, this dissertation contributes to the IT outsourcing literature by presenting the first in-depth, longitudinal and rich account of transition in an IT outsourcing relationship. This is strengthened further by developing a theoretical transition process model based on a high quality and rare empirical data. Second, this dissertation contributes to the knowledge transfer literature by focussing on the transfer mechanisms and examining their influence on transition performance. This is extended further by demonstrating that codification and task complexity moderate this relationship. Third, this dissertation contributes to the methodological approaches for studying complex phenomenon, such as transition, through the introduction of a novel experimental design that can be used for simulating and studying various IOR (or outsourcing) scenarios.

1.4 Structure of the Dissertation

This dissertation is organized as follows (see Figure 1.2). Chapter 2 reviews the background literature on determinants and challenges of successful IOR and outsourcing relationships. Chapter 3 justifies and describes the research methods used in this dissertation. Subsequently, Chapters 4, 5 and 6 each address the research questions presented in Section 1.2. Finally, Chapter 7 summarizes and synthesizes the findings from each study, highlights the implications for theory and practice, discusses the limitations of the research, and concludes with an agenda for future research.

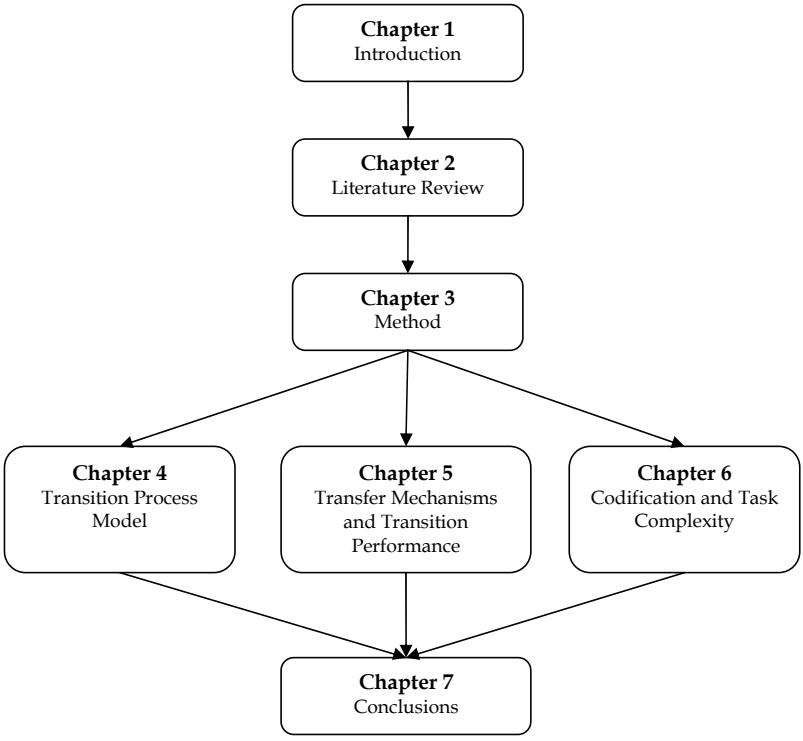


Figure 1.2 Structure of the Dissertation

2 BACKGROUND LITERATURE

This chapter presents a review of the relevant background literature related to the dissertation. The review is guided by two central themes: formation of an IOR and the significance of execution for the success of an IOR. First, we discuss the reasons underlying the development of IORs and illustrate outsourcing relationships as an IOR; the context for this dissertation. Second, we address the challenges related to execution that inhibit value creation from IORs, in general, using strategic alliances, networks, and supply-chain literature, and in particular for outsourcing relationships.

2.1 Why Interorganizational Relationships Develop?

> *"The increasing acknowledgment that organizations typically operate in a relational context of environmental interconnectedness and that an organization's survival and performance often depend critically upon its linkages to other organizations has generated a vast but highly fragmented literature on interorganizational relationships."* (Oliver, 1990: 241)
>
> *"The increasing importance of strategic alliances has resulted in growing interest in theorizing about their causes and consequences. However, the diversity of the phenomenon challenges our ability to develop all-encompassing theories. The problem is not so much a lack of theory as an overabundance."* (Grant and Baden-Fuller, 2004: 62)

In recent years, cooperative relationships between organizations have grown enormously. These are referred to as interorganizational relationships (IORs) and Oliver (1990: 241) defines them as:

> **Definition 2.1: Interorganizational relationships** "are the relatively enduring transactions, flows, and linkages that occur among or between an organization and one or more organizations in its environment."

IORs can not be conceptually captured as either a pure market-based transaction or an organizational hierarchy (Ring and Van de Ven, 1992; Barringer and Harrison, 2000; Grant and Baden-Fuller, 2004). Instead, IORs are envisioned as an "intermediate" or "hybrid" form of governance (Thorelli, 1986; Powell, 1987). These relationships emerge in various forms, such as, strategic alliances, networks, supply-chains and outsourcing deals. Scholars have suggested the growth of these relationships is the single most important trend in the current economic landscape (Drucker, 1995; Grant and Baden-Fuller, 2004). As Oliver's (1990: 241) comment at the beginning of this section suggests, a vast amount of literature on IORs is available and the majority of that attempts to explain the reasons behind their formation. In general, it is widely accepted that these relationships develop to create value by minimizing costs (Williamson 1985; Hennart, 1991); accessing resources, knowledge and skills (Eisenhardt and Schoonhoven, 1996; Lorenzoni and Lipparini, 1999; Das and Teng, 2000); fostering learning and innovation (Powell et al., 1996; Ahuja, 2000); allowing focus on core competencies (Prahalad and Hamel, 1990); providing entry to new markets (Kogut, 1991; Doz and Hamel, 1998) etc. These practical reasons have inspired scholars to apply several theoretical perspectives for explaining the development of IORs (Oliver, 1990; Ring and Van de Ven, 1992; Grandori and Soda, 1995;

Barringer and Harrison, 2000). In the next sub-sections, I briefly review three dominant perspectives[3] for the formation an IOR.

2.1.1 Transaction Cost Economics

TCE seeks to explain formation of interorganizational relationships by adopting largely a cost oriented perspective (i.e. cost minimization explanation) (Williamson, 1975, 1985, 1991; Hennart, 1991). This cost is the sum of production costs – costs related to internal operations and manufacturing of goods or services – and transaction costs – costs related to searching and monitoring of an external trading partner from the market (Kogut, 1988). Earlier, Williamson only identified two forms of organizing (1975, 1985) – hierarchies (within the firm boundaries) and market (outside the firm boundaries), but later added the form of interorganizational relationships (1991) in order to explain the development of alliances and joint ventures.

In this theory, transactions are characterized with three features – frequency, uncertainty and asset specificity – that determine whether transaction costs will be lower within the firm (hierarchy), in the market or in an alliance. Both high uncertainty and asset specificity could lead to a high potential of opportunistic behaviour by the external trading partner, there by increasing transaction costs. According to the theory, for any transaction of a product or service, firms choose the most cost efficient alternative available to them among the three options of make, buy or ally. Furthermore, Williamson's (1985) concept of "fundamental transformation" is relevant to the transition stage of an IT outsourcing relationship. The concept suggests that any initial exchange between partners (for instance, a client and a vendor organization) creates a "transaction residual" (for instance, the learning or knowledge achieved by a vendor about client's internal processes while delivering outsourced activities), which provides an advantage to the exchange partner (in this case, the vendor) for subsequent contracts. Therefore, the transaction residual (which can be considered as a control over transaction specific asset) transforms the contract bidding situation from large-numbers market (i.e. every vendor having an equal opportunity to win the contract) to small-numbers bargaining (i.e. only vendors that previously worked with the client firm get preference, for instance, due to their better understanding of client's internal process).

Despite its elegant explanation of a firm's mode of governance, TCE has attracted criticism for only offering a single dimensional cost efficiency rationale (Ghosal and Moran, 1996). For instance, the theory does not incorporate other reasons for entering interorganizational relationships, such as learning opportunities, or not entering, such as the possibility of cultural clash (Barringer and Harrison, 2000).

[3] For a review of other perspectives explaining formation of IORs, see e.g., Oliver, 1990; Grandori and Soda, 1995; and Barringer and Harrison, 2000

2.1.2 Resource Dependency

Resource dependency theory (RDT) suggests that a firm requires critical and valuable external resources, which have to be obtained from its environment (i.e. by developing relationships with other firms) (Pfeffer and Salancik, 1978). In this theory, the overarching goal of an organization, behind acquiring critical resources, is to maximise its power over other competitor organizations and within its environment (Pfeffer, 1981). But the need to acquire and control relevant resources creates dependencies for an organization, thereby reducing its power. Therefore, the theory suggests that a firm tries to acquire and exert control over critical resources that reduce its dependence on other firms and increase dependence of other firms on itself, thereby maximising its power.

Although RDT does explain the formation of alliances, it has received criticism as it does not touch upon organizational processes for transferring, acquiring and controlling the critical resources (Campling and Michelson, 1998; Barringer and Harrison, 2000).

2.1.3 Organizational Learning

Organizational learning theory (OLT) suggests that firms enter into interorganizational relationships to leverage learning opportunities and share knowledge related to sophisticated technological skills and capabilities (Kogut, 1988; Hamel, 1991; Doz, 1996, Kale et al., 2000). This learning is acquired through mechanisms such as knowledge transfer, knowledge sharing or knowledge creation among firms (Powell et al., 1996). Furthermore, organizational learning within these relationships can follow either exploration (such as opportunities for innovation) or exploitation (such as opportunities for improving in-house capabilities) behaviour (March, 1991).

Although OLT provides a strong explanation for the development of interorganizational relationships, especially in the current context of a knowledge economy, it has received criticisms on two fronts. First, it does not account for economic motivations related to developing these relationships given that the mechanisms for transferring or receiving knowledge involves costs that must be recovered (Barringer and Harrison, 2000). Second it does not incorporate a political and power perspective, which becomes critical for firms when transfer of highly specialized knowledge comes into the picture (Barringer and Harrison, 2000). Moreover, an interesting addition to existing theories for the development of interorganizational relationships is provided by Grant and Baden-Fuller (2004), they term it knowledge-accessing theory. Building on resource dependency theory (Pfeffer and Salancik, 1978), a resource-based view (Penrose, 1957) and a knowledge-based view (Grant, 1996), they suggest that an organizational learning explanation for the formation of interorganizational relationships, including outsourcing agreements, is limited. They propose that these relationships develop not to acquire knowledge resources from other firms – as suggested by the organizational learning theory – but to access them.

2.2 Outsourcing as an Interorganizational Relationship

In the current knowledge-based economy, IT serves as the backbone for deploying organizational strategies and processes (Ross et al., 2006). But at the same time, intense competition has led to a stronger focus on core activities, cost reductions and agility towards changing market conditions, causing a proliferation of IT outsourcing (Hirschhiem and Dibbern, 2006; Kern et al. 2002). Following Loh and Venkatraman (1992: 334), in this dissertation, IT outsourcing is defined as

> **Definition 2.2: IT outsourcing** occurs when an organization (client) contracts certain (or all) of its IT related activities to an external organization (vendor).

Furthermore, advancements in communication technologies, availability of competitive low-cost skilled labour, modularization of software development processes and maturity of IT vendors had led to the growth of IT offshore outsourcing (Carmel and Agarwal, 2002; Lewin and Peteers, 2006; Lacity and Willcocks, 2008).

> **Definition 2.3: IT offshore outsourcing.** Lewin and Peteers (2006:221) define offshoring as "locating an activity to a wholly owned company or an independent service provider in another country (usually low cost)". The latter part of this definition refers to IT offshore outsourcing (i.e. when an organization (client) contracts IT related activities to another organization (vendor), which executes it from another (low-cost) country).

Although different industry sources have predicted a varying market size for IT outsourcing, it is reasonable to assume that the size is significant. For instance, according to Gartner, in 2008, the global IT outsourcing market was around US$ 450 billion with over 20 "mega deals", which refers to a deal valuing over US$ 1 billion (Gartner, 2008). It is important to note that outsourcing is growing not only in terms of its market size, but also in its strategic importance for businesses. Organizations are considering outsourcing not just as a cost-reduction strategy, but more as a strategic partnership intended to create value. While McFarlan and Nolan (1995), and Quinn and Hillmer (1995) earlier suggested this approach towards outsourcing, DiRomauldo and Gurbaxani (1998: 68) presented several examples to illustrate this trend, for instance, "when Xerox Corporation recognized the pressing need to extend IT's contribution to critical business processes, outsourcing was a key component of its strategy. Dow Chemical realized it was losing IS staff with critical business skills, so it created a unique outsourcing joint venture to enhance career opportunities and gain access to a broader talent pool". Recent studies confirm the significance and growth of this trend (Quinn, 1999; Linder, 2004; Krishnamurthy et al., 2009).

To understand the reasons for the formation of outsourcing, scholars have adopted similar theoretical explanations as those for interorganizational relationships, primarily, transaction cost perspective (see Ang and Straub, 1998; Poppo and Lacity, 2002; Aubert et al., 2004), resource dependency theory (see Grover et al., 1996, 1997; Oh et al., 2006), and a resource-based view (see Roy and Aubert, 2002; Watjatrakul, 2005). Furthemore, other theories[4] explaining outsourcing include, agency theory (see

[4] For a comprehensive overview of these theoretical perspectives and their linkage to outsourcing refer Dibbern et al. (2004).

Bahli and Rivard, 2003; Choudhary and Sabherwal, 2003), contracting theory (see Seddon et al., 2007), and social exchange theory (see Kern and Willcocks, 2000).

2.3 Challenges for Value Creation from Interorganizational Relationships

Despite the staggering growth of interorganizational relationships and their potential for value creation, high failure rates for these relationships (e.g. Parkhe, 1993; Alliance Analyst, 1998) demonstrate critical challenges in realizing their benefits. Prior studies have suggested several reasons that inhibit value creation from these relationships, for instance, conflicting goals and objectives (Doz, 1996; Kale et al., 2000), ineffective partner selection (Ireland et al., 2000; Das and Teng, 2003), evidence of opportunism and distrust (Gill and Butler, 2003), organizational and cultural differences (Barkema and Vermeulen, 1997; Mohr and Puck, 2005), varying expectations (Madhok and Tallman, 1998), inept or inappropriate governance mechanisms (Park and Ungson, 2001; Bamford et al., 2003; Ernst, 2003), and dynamics in the environment or industry (Yan and Gray, 2001; Gill and Butler, 2003). Therefore, even though organizations enter into these relationships hoping to gain advantages, managing them to create value is extremely challenging (Madhok, 1995; Hoang and Rothaermel, 2005). Furthermore, although there are challenges linked to the initial stages of negotiation and commitment (following Ring and Van de Ven's stages of an IOR), the execution stage is considered significant for the success for any type of IOR.

For strategic alliances, Hoffman and Schlosser (2001), in their study of 70 firms, found that the "precise definition of rights and duties" to be used during implementation was the most critical success factor. Devlin and Bleackley (1988: 21) highlighted a similar sentiment stating that "alliances do not manage themselves… like marriage, you have to work at it". They further stressed that there is difficulty in foreseeing the direction an alliance might take; and therefore suggested that constant monitoring and "clear lines of accountability and responsibility" are extremely important (1988: 22). In a study of 102 firms represented by senior management executives (i.e. CEO, President, General Manager etc.), Pekar and Allio (1994) conceptualize that an alliance progresses in four stages: strategy development, partner assessment, contract negotiations and alliance operations. They found that it is the alliance operations stage in which high and low experienced firms significantly diverge in their responses, suggesting the importance of a good execution (or operational implementation) for creating value from an alliance. Along similar lines, Kale et al. (2002: 749) and other scholars (e.g. Draulans et al., 2003) argue that it is the alliance capability that allows for superior alliance performance and that this capability is developed using prior experience – "on the basis of incremental learning and fine-tuning of relevant day-to-day activities". This suggests that experience and learning accumulated during the execution stage of an alliance serves as a significant determinant for the success of current and future alliances.

For buyer-suppler relationships, Whipple and Frankel (2000) suggest that the strongest barrier to success is organizational (e.g. culture and reengineering the business process) rather than technical or financial factors. Furthermore, they state that the greatest costs arise during implementation due to

"both partners modifying traditional habits and beliefs while adopting new ways of conducting business"(2000: 22). Ellram (1995: 14) refers to the execution stage as establishing the relationship and states that "this phase of a partnership implementation is an art as much as it is a science" confirming the intricate and challenging nature of executing a relationship. Furthermore, she emphasizes the criticality of operational interactions with the partner in determining the future of the relationship and suggests that "central coordination is required to keep relationship operating smoothly and consistently" (1995: 14). Moreover, highlighting the importance of coordination during actual operations in a supply-chain, Lee et al. (1997) claim that certain information flows (as mechanisms for coordination) can potentially disrupt a supply-chain due to systematic distortion referred to as the bullwhip effect.

In addition to demonstrating the significance of execution for the success of IORs, it is important to note that although a vast amount of literature is available on IORs, the majority of this literature has focussed on a structural explanation for the formation of such relationships (Barringer and Harrison, 2000), while relevant processes related to these relationships have received limited attention (see, for example, Ring and Van de Ven, 1994; Doz, 1996; Arino and Torre, 1998; Dyer and Singh, 1998). Doz (1996: 56) suggests that although scholars acknowledge process issues involved in these relationships, such as, managing the coordination process, "their analysis remains at the level of conceptual development…and fails to capture empirically the process dynamics of collaboration". Arino and Torre (1998: 306) comment that "studies focusing on the phenomenon of alliance formation outweigh those dealing with their evolution" and "there is little empirical evidence on the dynamic aspects of collaboration".

Adopting a process perspective, Ring and Van de Ven (1994: 90) propose a model of IORs that proceeds in a sequential and cyclic fashion focusing on negotiation, commitment and execution stages. The negotiation stage includes developing joint expectations and assessing uncertainties in the relationship. The commitment stage involves the finalization of mutual obligations and procedures by firms and is realized either by signing a formal contract or by an understanding similar to a psychological contract between firms. The execution stage involves bringing previous commitments and procedures in action. Furthermore, formal structures and mechanisms, agreed upon in earlier stages, help in reducing uncertainty during execution. As the chance of "misunderstandings, conflicts, and changing expectations among parties is inevitable" (Ring and Van de Ven, 1994: 98), renegotiation between firms will ensue. During each of the stages, the actors involved in the relationships undergo repeated interactions, which are judged based on equity and efficiency.

Furthermore, Doz (1996) explores IORs by examining the role of the learning processes that mediate the initial conditions and outcomes. The focus of his study is to investigate "whether firms adapt their collaboration in an alliance to learning and feedback…or merely implement, with little adjustment…the initial alliance design" (1996: 56). Doz found that initial conditions linked to task definition, partner's organizational routines, interface design and expectations influence learning on

five dimensions: environment, task, process, skills and goals. This allows for re-evaluation of the relationship in terms of efficiency, equity and adaptability (1996: 70), which further leads to a readjustment of initial conditions.

As stated earlier, limited academic attention to the processes involved in these relationships calls for further studies to understand and enhance the chances for value creation from these relationships. In this dissertation, I continue building along similar lines focussing on the transition process in an outsourcing relationship.

2.4 Challenges for Successful Outsourcing Relationships

With a trend similar to other interoganizational relationships, the high growth rates of outsourcing deals are accompanied by high failure rates (see Lacity and Willcocks, 1998; Levina and Ross, 2003). Joint research by MIT's Centre for Information Systems Research (CISR) and *CIO Magazine* found that although outsourcing agreements have the potential for value creation, most agreements are extremely complex with significant hidden costs requiring extensive management to generate value (CIO, 2005, 2006). Scholars have suggested several challenges in achieving the expected benefits from outsourcing, such as, defining clear and unambiguous objectives or goals (Kern and Willcocks, 2000; Behara et al., 1995), selecting appropriate vendors (McFarlan and Nolan, 1995; Diromualdo and Gurbaxani, 1998; Barthelemy, 2001), negotiating comprehensive and mutually beneficial contracts (Lacity and Willcocks, 1997; Saunders et al., 1997; Kern et al, 2002), developing a clear understanding of outsourced tasks (Currie and Willcocks, 1998), handling coordination and control (Choudhary and Sabherwal, 2003; Sabhwerwal, 2003) and managing cultural and organizational conflicts (McFarlan and Nolan, 1995).

Furthermore, in an offshore outsourcing relationship, these challenges are exacerbated while some unique challenges arise primarily due to large geographic distances, technology mediated communication and national cultural differences (Carmel, 1999; Carmel and Agrawal, 2003; Cramton and Hinds, 2005). Other unique challenges include, selecting appropriate location(s) (Rottman and Lacity, 2006; Kotlarsky and Oshri, 2008), improving governance approaches for increased coordination, communication and control (Carmel and Tjia, 2005; Sakthivel, 2007), developing process maturity (Rottman and Lacity, 2006), handling time zone differences (Rottman and Lacity, 2004) and managing cultural diversity (Krishna et al., 2004; Carmel and Tjia, 2005; Ang and Inkpen, 2008).

3 METHODS

To answer the research questions, presented in Chapter 1, this dissertation adopts a multi-method approach, which is highly recommended for encouraging creativity, increasing internal and external validity, and dealing with the richness of the phenomenon under study (Mingers, 2001). To examine and understand transition comprehensively, we must study it both in the field and in the laboratory. As transition is closely embedded within its context (outsourcing), to understand its richness, it is necessary to study transition by contextualizing it (i.e. studying within an real IT outsourcing context). However, in order to determine valid causalities we must de-contextualize transition (i.e. studying in a controlled setting). For this purpose, we must utilize two complementary research methods – a longitudinal field study and laboratory experiments. Next, we explain the contextual reasons and theoretical premise for choosing these methods.

3.1 Why Longitudinal Field-Study?

A longitudinal field study is required due to three reasons. First, as the current literature on transition during an IT outsourcing relationship is scarce, we must study transition first-hand, in a real-life engagement, in order to develop its theoretical and practical understanding. Second, in order to thoroughly capture the richness of transition, we need to study it as it unfolds over time (i.e. longitudinally and in real-time). Last but not the least, the first research question RQ 1 (see Section 1.2) demands that we study the phenomenon (i.e. transition) in its context (i.e. outsourcing). Therefore, given these considerations, among the alternative research methodologies, such as surveys, simulations or experiments etc., utilizing a longitudinal field-study allows us to best conduct our investigation.

Scholars suggest that longitudinal field-studies allow researchers to study a phenomenon within its context which in turn generates fresh ideas and reveals important variables with their possible relationships (Eisenhardt, 1989 Pettigrew, 1990; Yin, 2002). Moreover, longitudinal field-studies are "a source of well grounded, rich descriptions and explanations of processes occurring in local contexts" (Miles and Huberman, 1994, p. 15), which makes them well suited for building emergent theory (Eisenhardt and Graebner, 2007). Therefore, this method is used in Chapter 4, to answer the research question RQ 1 (see Section 1.2).

3.2 Why Laboratory Experiments?

A longitudinal field-study allows us to capture the richness of transition and understand the critical processes or variables related to it in a real-life outsourcing engagement. But this must be complemented with a study in a controlled environment, which allows the researcher to comprehensively research transition by administering the flow of events,. The controlled setting permits us to isolate and focus on one or more of these processes or variables in order to rigorously

examine their influence on performance (or on any other dependent variable). Therefore, given this consideration, among the alternative research methodologies, laboratory experiments provide the best option to continue our investigation.

Scholars suggest that laboratory experiments provide a highly controlled environment, which assists in determining and strengthening causality (Shadish et al. 2002). Furthermore, prior research on outsourcing, primarily due to its novelty and complexity, has usually been conducted using in-depth field-studies (see Choudhury and Sabherwal, 2003; Lacity and Willcocks, 1998; Levina and Vaast, 2008) and surveys (see Ho, Ang and Straub, 2003; Mao, Lee and Deng, 2008). Although extremely insightful, these methods are not very strong in isolating, controlling and studying specific aspects of this rich phenomenon. As outsourcing research matures, it needs to progress from exploring constructs to testing constructs and relationships in a controlled environment. With the experiments in this dissertation, we present a novel design to follow this proposed path. It is important to note that although an experimental approach provides the necessary control to determine causal relationships, it complements rather than substitutes for existing insightful studies. This method is used in Chapter 5 and 6, to answer the research questions RQ 2 and RQ 3 (see Section 1.2).

Using laboratory experiments to study organizational phenomena is not recent. It has been suggested by several scholars, most notably, Weick (1965; 1969; 1977) and has produced some ground breaking studies (such as Bavelas, 1950; Coch and French, 1948; Cohen and Bacdayan, 1994; Cyert, March and Starbuck, 1961; Leavitt, 1951). Weick (1965: 199) suggests using an experimental approach not only for theory testing purposes but also for exploring any phenomenon: "Experiments *are* observation. Experiments permit induction as well as deduction. It is just as easy to 'look around and see what is going on' in the laboratory as it is in the field" (emphasis in the original). The most common argument against using laboratory experiments is that they sacrifice real-world complexity, thereby reducing generalizability, in order to gain stronger causality. Weick (1965) argues that this sacrifice in realism can be intentional and rather represents strength of the approach; for instance, by reducing complexities and removing confounding factors one can focus on a particular phenomenon in the laboratory. With regard to realism, Weick (1965: 202) suggests that an experimental setting need not be similar to the real-life setting in "content" or "visually" but must have "similarities in pattern and structure" and that "experimental settings will be more relevant to organizational settings if they include some…[of its] recurring characteristics." Similarly, Zelditch and Hopkins (1961: 41) argued that "two systems [laboratory and real-life] must have at least some properties in common" for generalizations to be possible. Guetzkow and Simon (1955: 233), in their experimental study, noted that their design is "stripped of the complexities of large-scale organizational groups" but retains "some essential characteristics of the organizational communication problem." In essence, to study a real-life phenomenon in the laboratory, it is important to capture certain significant aspects of the phenomenon in the experimental design. In our experiments, the outsourcing scenario and the task

had to reproduce several key elements of their real-world counterparts. These elements and their operationalization are detailed in Chapter 5 (see Section 5.2).

4 UNDERSTANDING TRANSITION DURING OUTSOURCING: A PROCESS MODEL[5]

In recent years, (offshore) outsourcing has been high on the CIO agenda (Gartner, 2004; McKinsey, 2008). This is, in part, driven by its consistently growing market size (Willcocks and Lacity, 2007). Complimenting the existing outsourcing research, this study focuses, on hitherto overlooked, but critical execution challenges related to (offshore) outsourcing immediately after the contract is signed. It examines the transition stage, which promptly succeeds contract signing and involves the critical process of transferring the ownership of outsourced activities from the client to vendor firm (Carmel and Beulen, 2005; Lacity and Willcocks, 2000; Oshri et al., 2007). Industry sources suggest that two-thirds of all failed outsourcing relationships can be traced back to issues related to transition (CIO, 2007). Despite its significance for the success of outsourcing relationships, transition has received limited academic attention.

Based on an in-depth longitudinal field-study, capturing transition in real-time and following the guidelines for process theorizing (Langley, 1999; Mohr, 1982; Van de Ven and Poole, 1995), we inductively develop and explain a transition process model consisting of three phases – *transfer*, *adapt* and *routinize* (see Figure 4.3). For each phase, we illustrate the triggering conditions, key activities and outcomes for progression to the next phase. The next section, briefly presents the theoretical background, followed by the methodology. Subsequently, we present the findings and discuss the transition process model.

4.1 Theoretical Background

While outsourcing refers to contracting certain (or all) activities to an external vendor (Loh and Venkatraman, 1992), offshore outsourcing involves a vendor, which locates the execution of these activities to another, usually low-cost, country (Lewin and Peteers, 2006). An (offshore) outsourcing relationship can broadly be divided into six stages (see Figure 1.1) –Although each stage presents several challenges for the overall success of the relationship, transition is considered particularly significant due to its unique character and timing (Carmel and Beulen, 2005). Transition immediately succeeds the contract signing stage and includes the first few joint operational steps in which client and vendor firms must manage the handover of outsourced activities and related roles and responsibilities (Oshri et al., 2007; Hawk et al., 2009). These operational steps "are significant in that they create an initial perception of outsourcing… [That] can be difficult to change at a later date" (Sparrow, 2003: 108). Transition is aimed at allowing the vendor to successfully takeover outsourced activities and to "establish operational performance" in the new arrangement (i.e. the post-outsourcing period) (Lacity and Willcocks, 2000: 368). Transition represents a notably complex inter-

[5] This study was presented as a full-paper at the Social and Organizational Aspects of IS track at *International Conference on Information Systems* 2009, Phoenix

organizational phenomenon as it involves implementation of, amongst others crucial activities, transferring outsourced tasks, people and technology from client to vendor firm, creating a post-contract governance structure between client and vendor firms, and restructuring at the client firm (Cullen and Willcocks, 2003). Based on the contractual scope, size and complexity of outsourced activities, transition can last from a few weeks to a few years and consume up to 15% of the first year's outsourcing cost (Gartner, 2005; Lacity and Willcocks, 2000). In this dissertation, based on the work of Lacity, Willcocks and their co-authors, we define transition as follows:

> **Definition 4.1: Transition** represents a stage in an outsourcing relationship that involves the handover and integration of outsourced activities along with related knowledge, experiences and routines from client to vendor firm. It begins immediately after contract signing and ends when a pre-defined performance level, agreed in the contracts, is achieved.

Building on the foundations of outsourcing, knowledge management and organizational learning literature, we conceptualize transition as a culmination of four interrelated organizational processes – transfer, learning, adaptation and routinization as each of them is dominant at different times during the transition stage. Furthermore, transition involves smoothly performing these processes until a pre-defined operational performance (as agreed in the contract) is achieved between the client and the vendor firm (Lacity and Willcocks, 2000). Implementing each of these processes involves significant challenges that must be overcome for a successful transition.

Transfer, referring to the transfer of knowledge, experience and routines (Szulanski, 1996), represents the most challenging process due to its complexity and significance for transition. Once an outsourcing contract is signed, the immediate next step requires the client firm to transfer, in a short period, their years of accumulated knowledge (both explicit and tacit), experiences and routines related to the outsourced activities to the vendor firm (Carmel and Beulen, 2005; Hawk et al., 2009) who are required to learn and absorb these in order to replicate the outsourced activities either at the client or vendor site or both. This makes transfer extremely significant because it serves as the foundation for transition (and the entire outsourcing relationship) by providing a detailed and operational understanding of outsourced activities.

Learning (Argote, 1999) during transition, takes place primarily along two dimensions: learning to perform the outsourced tasks such as client-specific application development and maintenance activities etc. and learning to adapt the inter-organizational setting related to the outsourcing relationship; for instance, at the client firm, structuring the retained organization etc. (Feeny and Willcocks, 1998), or at vendor firm, mirroring the client's structure etc. (Oshri et al., 2007). Vendor personnel face difficulties with learning, as client personnel who possess much of the knowledge that needs to be transferred are concerned with their job security and may adopt uncooperative behaviour (Cullen and Willcocks, 2003). Furthermore, while vendor personnel are learning from the client, duplication of roles occur as two resources (one client and one vendor personnel) provide a single output, which increases the costs, thereby, constraining the duration of transfer and overlap period

with the client. This, in turn, further reduces the opportunity to learn. Adaptation is closely linked to and manifests from learning (Levitt and March, 1988; Huber, 1991). It involves "modifying or combining" routines and plays a significant role during transition to integrate the knowledge transferred and learning acquired (Williams, 2007). However, with limited transfer and insufficient learning, adaptation – in the form of modified structures or processes at either firm – is challenging to perform, increases risks and can lead to costly mistakes (Williams, 2007). After the required adaptation is achieved, both client and vendor firms need to routinize, or in other words institutionalize, the modified structures and processes by repeated execution (Weiss and Ilgen, 1985). While routinization presents challenges, both cognitive (difficulty in understanding changed processes) and motivational (negative incentive in adopting changes processes) (Lazaric and Denis, 2005), it is necessary to achieve an increased efficiency in performance (Gersick and Hackman, 1990).
Although, IS scholars have productively focussed on other stages of the outsourcing lifecycle, academic research on transition is scarce. Therefore, given transition's theoretical richness and significance to practice and its current limited understanding, a detailed academic inquiry is needed on:

RQ 1: *How transition proceeds during outsourcing and why?*

This study answers this question, by capturing longitudinally and in real-time, the transition stage of an offshore outsourcing project between a utility firm and a global IT vendor.

4.2 Method

The choice of longitudinal field-study and its relevance for this study is discussed in Section 3.1. In this section, I present an overview of the case description, data collection, and analysis.

4.2.1 Case Selection and Description

Several practitioners (from IT vendor and third party consulting firms) were contacted regarding the phenomenon of transition, its planning and implementation challenges and its importance for outsourcing success. These discussions were used both for learning about transition and searching for an ideal case. The case had to satisfy two selection criteria. First, to answer the research question successfully and with high quality data, we had to study transition "in-action" (i.e. in real-time over its entire lifecycle as compared to studying transition from retrospective stories or informant accounts). Hence, we needed a longitudinal study and not a cross-sectional study. A longitudinal study requires that data collection take place throughout the transition period and with informants working in several diverse roles in the outsourcing project. This meant that the access to the case needed to be substantial allowing for extensive data collection. Second, the case selected must have an offshore component to qualify for a global outsourcing setting. Although, this was not necessary to answer the research question, we were more interested in a global outsourcing project rather than a

domestic project. This meant that the vendor firm needed to have an offshore location with some members of the project based in offshore, which should be involved in carrying out some (or all) outsourced activities. Furthermore, we wanted to keep India as the offshore location as it is one of the mature offshore destinations (Kotlarsky and Oshri 2008), which reduces confounding effects arising, mainly, due to inexperience with offshore outsourcing.

Although transition is part of every outsourcing project, it is extremely challenging to find access to the transition stage for academic research (which could partially explain the lack of studies on it). Moreover, additional selection criteria, significant for making a theoretical contribution, further constrained the options available. The challenges arise, primarily, due to three reasons. First, identifying potential outsourcing projects that are about to begin transition requires the researchers to track several projects that might currently be in the contract negotiations stage - information which firms are generally not willing to share until the deals are closed. Second, the delay introduced while getting access to a case (due to any bureaucratic or hierarchical approval processes, which are very common) can lead to a transition stage already more than half-way finished. Finally, client and vendor practitioners are usually not keen to approve a study of their transition stage in order to avoid highlighting any errors or mistakes made by their firms.

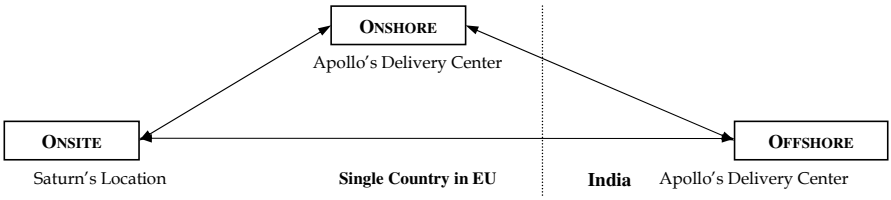


Figure 4.1 Saturn-Apollo Distributed Setting

After searching, for over 12 months, and discussing with several practitioners about possible case(s) to study, we selected "CUSTOMER" project, which involved "Saturn", a European utility company and "Apollo", a global IT vendor – all names are pseudonyms to protect the identity. It satisfied the selection criteria and provided a unique and rare opportunity to study transition during offshore outsourcing with exclusive access to longitudinally capture in real-time an entire transition stage, involving three distributed locations, with multiple and comprehensive interactions with the personnel playing key roles (see Figure 4.1, Figure 4.2 and Table 4.1). Thus, this case represents a revelatory case (Yin 1994).

Saturn is a leading European utilities firm. It employs a total workforce of over 10.000 and serves around 2.5 million customers. Apollo is a global IT outsourcing vendor. It is a US-based organization but has significant presence in India with several delivery centers employing over 150,000 people globally in around 50 countries. Saturn had a previous relationship with Apollo, where the latter was hired for certain IT projects. In 2005, Saturn began to implement a multi-vendor sourcing strategy. The CUSTOMER project, the focus of this study, was signed in August 2007 and involved outsourcing

(with a significant offshore component) specific application development and maintenance activities to Apollo. It marked Saturn's first experience with offshore outsourcing with the contractual amount totalling over several million dollars for a period of two years. Until now, within Saturn's IT function, the majority of personnel performing application development and maintenance activities were third party contractors. Some of these had been working with Saturn for over a decade. According to the contract, Apollo had to be responsible for the outsourced activities and several contractors were to be released. These activities were to be performed in a distributed setting from three locations[6] (see Figure 4.1) – Saturn's own location, referred as *Onsite*, based in Europe Union (EU); Apollo's delivery centre based in the same country as Onsite in EU, referred as *Onshore* and Apollo's delivery centre based in India, referred as *Offshore*. In terms of the size of the project, it was expected to utilize in total, from Apollo around 25 personnel (i.e. full time equivalents [FTEs]) during steady-state operations, and around 40 contractors from Saturn were to be released due to this outsourcing arrangement.

4.2.2 Data Collection and Analysis

Data collection began in August 2007 and was completed around May 2008, along with a follow-up session in November 2008. The approval to study the project came from senior IT managers at both Saturn and Apollo, who allowed the extensive access necessary to answer the research question. The data was collected through semi-structured and unstructured interviews, notes from informal discussions, extensive project documents, observations from visits to the sites, a workshop (organized six months after transition period ended) and e-mail correspondence. From Aug 2007 to May 2008, throughout the transition period – lasting from Aug 2007-April 2008 - several formal interviews and informal discussions with diverse yet involved CUSTOMER project personnel were held (see Project Personnel Interviewed in Figure 4.2). Formal interviews were conducted using semi-structured interview protocol, which was provided to informants in advance, and lasted from 40 minutes to over 3 hours (average 1.25 hour). Twenty-nine of these interviews (see Table 4.1) were audio taped with permission, along with extensive notes taken during interview. All audio tapes were fully transcribed for data analysis purposes. Informal discussions and interesting observations from spending time at project sites were not audio taped but were written down as notes, mostly after the conversation or visit on the same day. Key informants were interviewed, formally or informally multiple times and during various phases of the transition in order to understand major developments in the CUSTOMER project.

[6] It is important to note that we distinguish between Onsite and Onshore. While the former refers to client-site i.e. Saturn's IT function's location, the latter refers to Apollo's delivery center in the same country but a different city than the client-site.

Table 4.1 Details of Informants[7]

Firm	Location	Role	Formal Interview Date(s)
Apollo	Onshore	Partner	18-01-08
	Onshore	Onshore Transition Lead	13-09-07; 28-01-08; 17-03-08
	Onshore	Onshore Project Lead	16-01-08; 12-03-08
	Onsite	Onshore Transition Coordinator-1 (Sep-Oct 2007)	14-12-07
	Onsite	Onshore Transition Coordinator-2 (Nov-Dec 2007)	30-11-07
	Onsite	Onshore Transition Coordinator-3 (Jan 2007-)	12-03-08
	Onsite	Functional Consultant-1	17-12-07
	Onsite	Technical Consultant-1	5-12-07
	Onshore	Technical Consultant-2	15-02-08
	Onshore	Technical Consultant-3	15-02-08
	Offshore	Offshore Transition Lead	11-12-08
	Offshore	Offshore Project Lead	10-01-08
	Offshore	Offshore Team Lead	5-12-07; 17-01-08
	Offshore	Functional Consultant-2	5-02-08
	Offshore	Technical Consultant-4	8-02-08
	Offshore	Technical Consultant-5	5-02-08
Saturn	Onsite	IT Delivery Manager	21-03-08; 04-11-08
	Onsite	Client Transition Lead	23-11-07; 28-03-08; 04-11-08
	Onsite	Client Project Lead	28-03-08; 30-04-08
	Onsite	Functional Consultant	31-03-08
	Onsite	Technical Consultant	28-03-08

In Nov 2008, a three-hour workshop with six senior Saturn personnel was also conducted to reassess the current status of the project, reflect on the transition period and share preliminary research results. The workshop included, two key informants from Saturn (IT Delivery Lead and Transition Lead, see Table 4.1), while among the other four – two were currently involved with transition on other outsourcing projects within Saturn (involving a different vendor) and two were from business units. The key insights and significant conversations from this workshop, about Saturn's transition experience, were also noted.

The data access and longitudinal data collection forms a key strength of this study, primarily, due to inclusion of several informants with diverse and relevant roles, from both Saturn and Apollo (onsite, onshore and offshore sites) and at different stages of the project. The informants from offshore in India were interviewed on the phone due to travel budget constraints. The interview protocol focused on soliciting challenges faced (at that point in time), solutions adopted, key learning points, and transition performance (in terms of budget, delivery time and quality).

[7] Due to the request from both the firms, identity of informants is not included

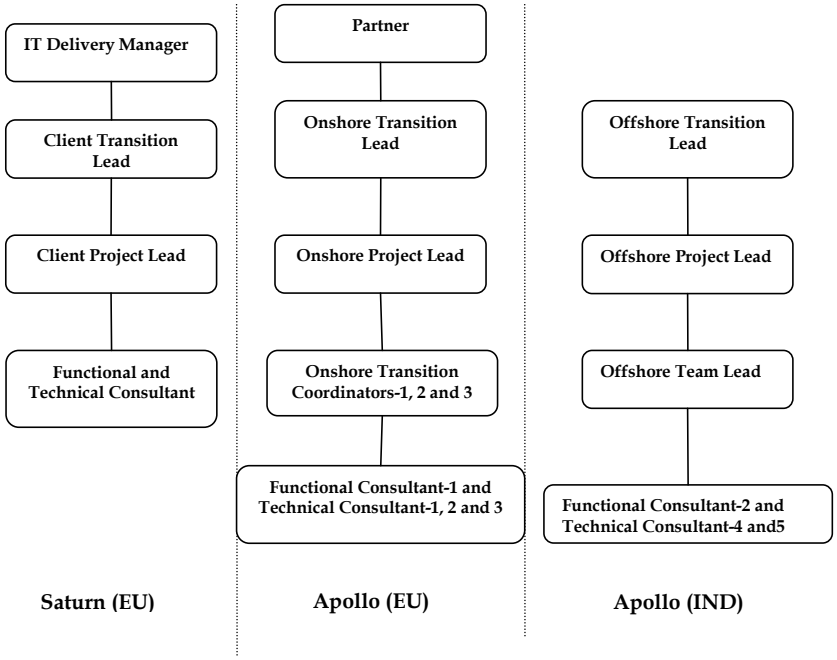


Figure 4.2 Project Team Structure and Informants Interviewed

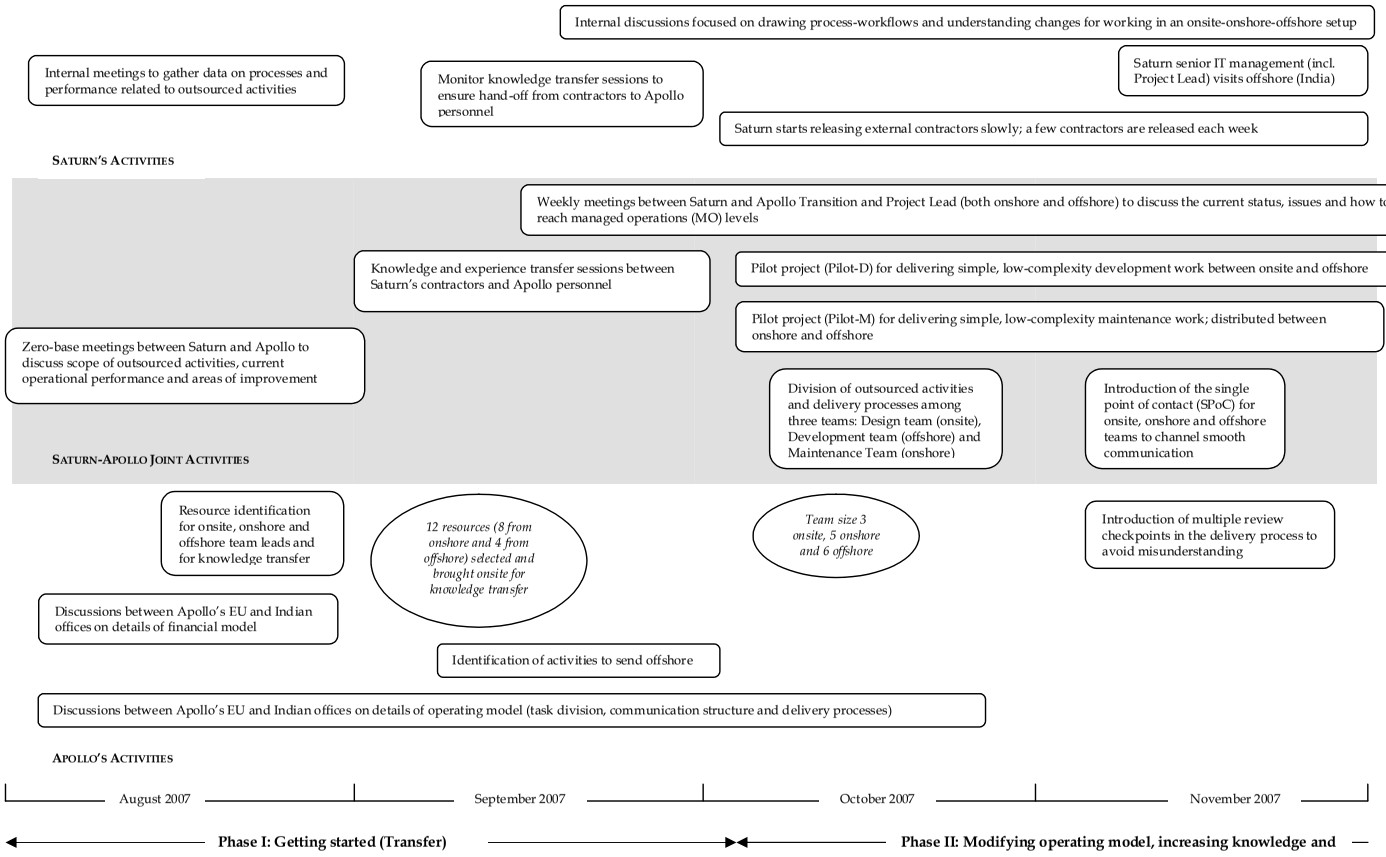
Initial data analysis proceeded along with data collection (Eisenhardt, 1989). While conducting and summarizing an interview, if the researcher noted any insights these were converted to conceptual themes and potential propositions for a transition process model. Due to the longitudinal nature of data collection, modifications of these themes and propositions were then included in the next interview for confirmation or rejection (and the reasons behind it). Next, within the entire set of transcribed interviews, a narrative strategy (Langley, 1999) was used to organize the enormous data and a timeline was used to chronologically arrange the data (Mason et al, 1997). This led to a condensed summary of how the project proceeded. Along with the descriptive story, visual mapping (Langley, 1999) was used to highlight various events, dimensions or issues, and parallel activities (see Figure 4.3, for a version highlighting major activities) and to aid in development and confirmation of high-level theoretical themes (Pettigrew, 1990). The next step in the analysis involved moving from facts to first-order concepts in order to generate new or confirm prior themes (Van Maanen, 1979). This transition to new themes was done methodically using several qualitative analysis techniques such as open, axial coding and constant comparison (Miles and Huberman 1994). Finally, rewriting, comparing and re-analyzing the data from multiple angles led to fine-tuning of the theoretical themes.

4.3 Findings

In this section, we conceptualize and illustrate the progression of the transition stage, during the CUSTOMER project, in the three phases[8] – *transfer, adapt* and *routinize* by addressing the key objectives and activities within each phase along with challenges faced and solutions adopted (see Figure 4.3, where rectangular brackets depict activities and circular brackets depict the current state at a given point in time). We also discuss the triggering conditions and outcomes for each phase (see Figure 4.5 from Transition Process Model section).

In 2005, Saturn adopted a multi-sourcing strategy. In Feb 2007, Saturn signed an outsourcing contract with a regional vendor for application testing activities, with no offshore component. The CUSTOMER project was the second project outlined for outsourcing and involved the application development and maintenance activities for one of Saturn's application clusters (they had three such clusters organized around different technologies). Initiation and vendor selection stages for this project started in the last quarter of 2006. In December 2006, interested vendors responded to Saturn's tender and were evaluated on the financial and functional solutions (i.e. how they will take over outsourced activities, how they will reach the cost levels they stated etc.). In February 2007, detailed proposals were sent to selected vendors for a comprehensive solution response and full-day workshops were conducted with each of them to discuss their solution (including transition overview and approach) and Saturn's concerns. Their primary concern, with outsourcing (and specifically offshore outsourcing), was related to shifting control of the outsourced activities from their managers to vendor personnel and the risk of losing it midway. The workshops reinforced Saturn's initial preference to adopt a staged approach (vs. big bang) to shift control slowly as the vendor gains experience in Saturn's operations and organization. These workshops were followed with site visits, by Saturn's IT management team, to each of the vendors' offshore development center (in India) to experience their operational setup and meet with potential project managers.

[8] The label for these phases is defined by us and do not come from any project-related documents. These labels are based on the key objectives that are served within the phases.


Internal discussions focused on drawing process-workflows and understanding changes for working in an onsite-onshore-offshore setup
Internal meetings to gather data on processes and performance related to outsourced activities
Monitor knowledge transfer sessions to ensure hand-off from contractors to Apollo personnel
Saturn senior IT management (incl. Project Lead) visits offshore (India)
Saturn starts releasing external contractors slowly; a few contractors are released each week
SATURN'S ACTIVITIES
Weekly meetings between Saturn and Apollo Transition and Project Lead (both onshore and offshore) to discuss the current status, issues and how to reach managed operations (MO) levels
Knowledge and experience transfer sessions between Saturn's contractors and Apollo personnel
Pilot project (Pilot-D) for delivering simple, low-complexity development work between onsite and offshore
Pilot project (Pilot-M) for delivering simple, low-complexity maintenance work; distributed between onshore and offshore
Zero-base meetings between Saturn and Apollo to discuss scope of outsourced activities, current operational performance and areas of improvement
Division of outsourced activities and delivery processes among three teams: Design team (onsite), Development team (offshore) and Maintenance Team (onshore)
Introduction of the single point of contact (SPoC) for onsite, onshore and offshore teams to channel smooth communication
SATURN-APOLLO JOINT ACTIVITIES
Resource identification for onsite, onshore and offshore team leads and for knowledge transfer
12 resources (8 from onshore and 4 from offshore) selected and brought onsite for knowledge transfer
Team size 3 onsite, 5 onshore and 6 offshore
Introduction of multiple review checkpoints in the delivery process to avoid misunderstanding
Discussions between Apollo's EU and Indian offices on details of financial model
Identification of activities to send offshore
Discussions between Apollo's EU and Indian offices on details of operating model (task division, communication structure and delivery processes)
APOLLO'S ACTIVITIES
August 2007
September 2007
October 2007
November 2007
Phase I: Getting started (Transfer)
Phase II: Modifying operating model, increasing knowledge and

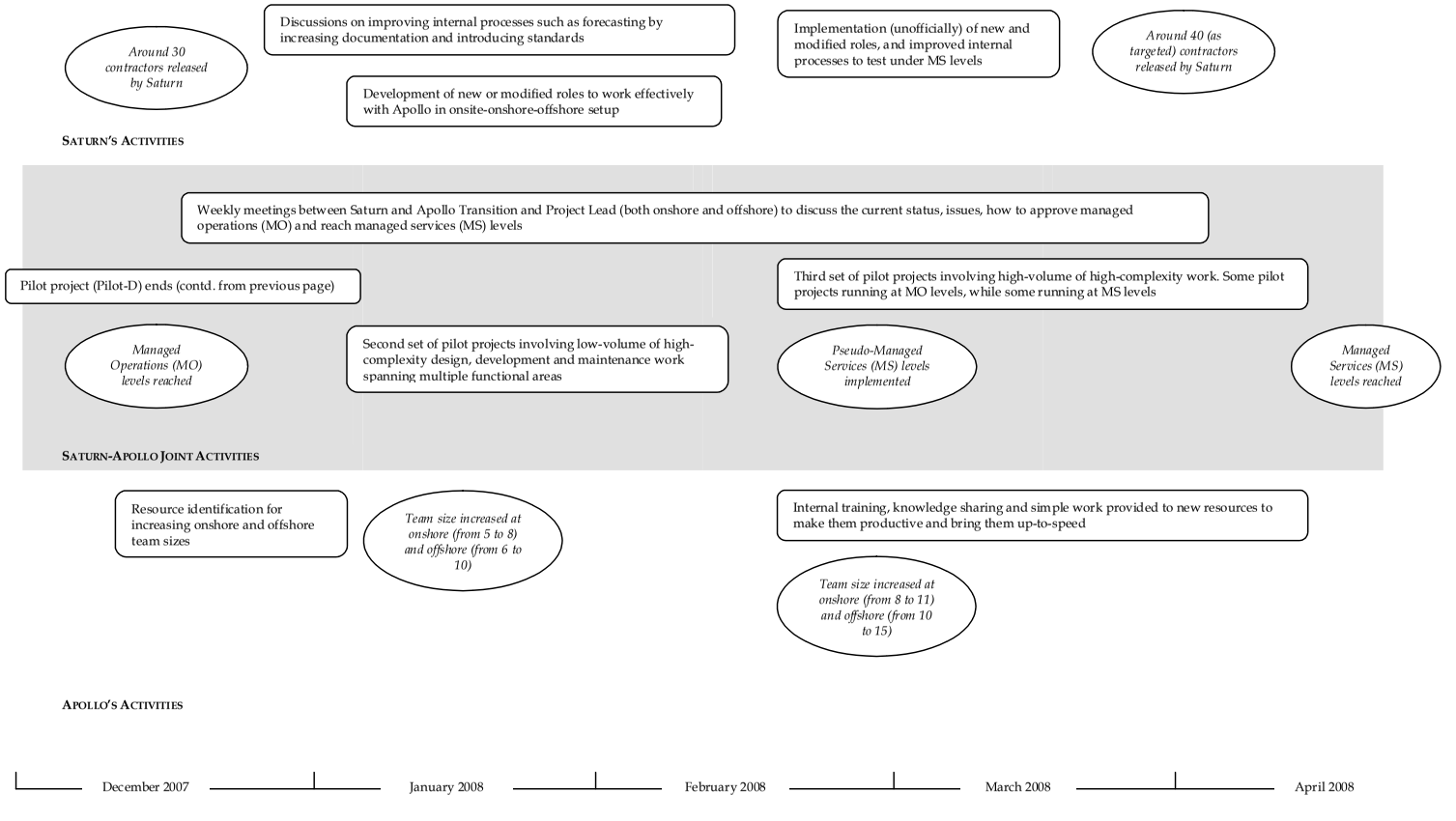


Figure 4.3 Major Activities during Saturn-Apollo Transition

4.3.1 Initial Conditions: Contract Signed and High-level Project Plan

In June 2007, Apollo emerged as the front-runner for the CUSTOMER project, primarily due to their willingness to incorporate Saturn's concerns and tailor the solution to mitigate control-related risks whereas other vendors offered a standard solution. In August 2007, the official contract was signed between Saturn and Apollo for a two-year period, with the possibility of extension for three years subject to performance conditions. In the period leading up to contract signing, mainly June and July, high-level project planning (including transition planning) started, in which senior managers (especially Transition Leads[9] and Project Leads) from Apollo's onshore and offshore teams along with Saturn's senior managers were involved. This planning had two aspects the front-end relationship between Saturn and Apollo (irrespective of the locations) and the back-end relationship between Apollo's onshore and offshore sites. While the former included discussions between Apollo (represented by onshore personnel) and Saturn about the financial model (e.g. potential cost savings etc.), service level agreements (SLAs), operating model (i.e. the governance model utilized for managing the distributed teams, outsourced tasks and processes), resource volume and capability; the latter included similar discussions internally between Apollo's onshore and offshore teams. The two conditions – a signed contract and availability of a high-level transition plan – served as the initial conditions for transition to begin starting from the 1st of August 2007.

4.3.2 Phase I: Transfer

Although a high-level understanding of activities to be outsourced was present, lack of clarity about the specific activities to be performed and the division of roles and responsibilities at operational level characterized the early period of the transition process. The first phase is referred as *Transfer* because its objectives were: (a) for both Saturn and Apollo, to examine the actual scope along with aligning expectations and, (b) for Apollo, to gain an initial understanding of the outsourced activities through the transfer of knowledge, experience and routines. This phase lasted for around two months from early-Aug to early-Oct 2007.

In the first-half of Aug, just before knowledge transfer started, several conferences were held between Saturn's and Apollo's onshore Transition and Projects Leads. These meetings focused on:

> *"….giving Apollo a feeling of our [Saturn] current operational level…the main question was how are we performing and what are the things we can improve easily and what are the things we cannot improve very easily but are working on it, those were made visible… [by] setting up interviews, getting process descriptions, giving them insight in our impact analysis and the level of estimation etc…"* [Saturn, Project Lead]

[9] It is important to not here that Transition Lead was higher in hierarchy than Project Lead. Transition Leads were usually focusing on multiple projects while Project Leads were dedicated to a single project.

4.3.2.1 Getting Started: Knowledge Transfer

During August 2007, Apollo started searching internally for technical and functional resources to join the project. During this time, they found that identifying and allocating expert resources on a short notice was challenging. Furthermore, Project Leads, from both onshore and offshore, initially struggled to develop a detailed operating model with regards to the task division, communication structure and delivery processes among the prospective onsite, onshore and offshore teams:

> *"I joined full-time in August… it was a stage wherein planning was going on, a lot of things were not clear. There were a lot of ambiguities regarding the execution, regarding the overall plan of the project, how we are going to go about it… I think majority of it is because it depends upon the kind of responses that our onshore team was getting from Saturn… there was little information flowing in from Saturn and that information was then again passed on to us. There were issues around work start dates, whether we were going to go for a pilot first, or maybe directly jumping on to execution…so, these were some questions on which got some clarity around the second week of August, based on this we modified our planning and started identifying resources"* [Apollo, Project Lead - Offshore]

Around the end of August 2007, 8 onshore and 4 offshore personnel were identified (and flown from India) to work on the project. In early-September, knowledge transfer sessions started for both application development and maintenance activities. Most sessions took place at onsite, while some were conducted at onshore. While 5 onshore and 3 offshore personnel took the lead on the maintenance project, the other 3 onshore and 1 offshore personnel (who would later become Team Lead – Offshore) were responsible to grasp application development activities. Three significant challenges related to knowledge transfer emerged – an ambitious timeline due to the limited availability of Saturn's contractors, the uncooperative attitude of these contractors, and a lack of appropriate project tracking tools. While resources from Apollo were ready to receive knowledge transfer, Saturn's management was not yet fully prepared for it and had not sufficiently planned for the availability of their contractors, especially as these contractors had to continue working on their operational activities in addition to conducing knowledge transfer sessions:

> *"We were a lot quicker from our side than from Saturn's side. So, we brought our people in but the client wasn't ready yet for them… and overwhelmed with it and so scheduling the knowledge transfer at the beginning for our offshore team was difficult."* [Apollo, Project Lead – Onshore]
>
> *"The important thing in knowledge transfer is to have a very concrete plan... it is critical especially when we are talking about people going onshore, sitting over there, burning the budget and spending time… so we need to have concrete planning… that is one area of improvement for Saturn in terms of planning for expert availability… it was not very clear."* [Apollo, Project Lead – Offshore]

The knowledge transfer for both maintenance and development activities was initially planned in two stages of one month each, but this time-line was accelerated because of increased pressure due to the departure of key contractors from Saturn who were not inclined to transfer their knowledge:

> *"It [knowledge transfer] was planned for 2 months and then they [Saturn] wanted to do it in 2 weeks but that didn't happen…well, because of course those contractors were leaving, first of all they didn't really want to cooperate. They didn't care, they were leaving. Then we had a problem where all the knowledge transfer had to be crammed into a limited amount of time… but of course for contractors operational activities were going on as usual… so we really had some problems getting the contractors to free up time in order to do the knowledge transfer… in the end we did get knowledge transfer (KT) for about one month I think. The other problem we had was that as soon as we had the KT, their [Saturn's contractors] mindset was, 'ok, so you know everything, you solve it'…so it was a pretty difficult period to get this whole show running."* [Apollo, Technical Consultant-2 – Onshore]

Furthermore, due to the expedited planning, coupled with several unplanned, arbitrary knowledge transfer sessions, the necessary knowledge transfer tracking tools were not used. This created complications for both organizations in monitoring the current knowledge levels of Apollo's personnel which was partially alleviated by developing and using temporary tools:

> *"Another major issue was that this activity [knowledge transfer] was not tracked in any tool or template…I had some experience of such projects so I picked up a template and on my own basis, I used to talk to my people [offshore personnel] there [at onsite] and tell them to fill up the tracker daily…it included what activities they've worked on daily basis. I knew that we would be staying there for around four or six weeks and if we do not capture whatever we are being told… Saturn can come back tomorrow and say that we already provided you the budget and you have already burned it and there's no knowledge lying around… that could put us in trouble."* [Apollo, Project Lead – Offshore]
>
> *"What I did is that the handing over party [i.e. Saturn's contractors] should sign a form and the receiving party [Apollo personnel] should sign a form that they really exchanged the knowledge. So I may not have that much power over people who leave but I have at least a formal signoff that the knowledge was given to you and Apollo has accepted that they now have enough knowledge."* [Saturn, Transition Lead]

As knowledge transfer proceeded, the offshore team in India was increased by 5 new resources, which were planned to work on application development activities. During this period, the offshore Team Lead (who was onsite and responsible for the KT on application development) was constantly looking for activities that could initially be done from offshore. Meanwhile, discussions on the operating model between Apollo's onshore and offshore Project Leads were also finalized. But Saturn grew a little apprehensive with the onshore-offshore delivery model as they had never worked in such a setting, were not sure about how to handle it and hence, were anxious to relinquish control:

> *"Basically, what we initially discussed with Saturn was that maintenance work will be done from onshore and development work will be done from offshore after knowledge transfer but they wanted to do some pilots for two to three weeks and we said, well this is not going to fly as that is too short. We need to have some volume. I mean, we don't need 40 people to work on it but three weeks is too short…so we are now going to have a number of pilots."* [Apollo, Transition Lead – Onshore]

Eventually, knowledge transfer completed with some hiccups and the offshore personnel went back to India. In early-October, it was decided that two major pilots would be launched – one for maintenance activities (referred as Pilot-M) and other for development activities (referred as Pilot-D). So, once adequate knowledge and understanding were achieved, pilot projects were initiated and the entire project moved into an operational performance mode involving the actual delivery of activities, marking the end of the *transfer* phase.

4.3.3 Phase II: Adapt

After allowing operational personnel from both firms to familiarize with each other and achieve a certain level of understanding about other's organizational setting, outsourced activities and delivery processes, it was time to start executing and pushing *low complexity* and *low volume* of work (from both the development and maintenance areas), to explore and determine a suitable operating model, between Saturn and Apollo. This phase is referred as *Adapt* because its objectives were: (a) for both Saturn and Apollo to critically evaluate and modify the delivery processes between them, (b) for Apollo, to gain in-depth knowledge and understanding of Saturn's specific applications and (c) for

Saturn, to reorganize and redefine the roles and responsibilities of its retained personnel. This phase lasted for over four months from early-October 2007 to mid-February 2008.

4.3.3.1 Modifying Operating Model: Task Division, Communication Structure, and Delivery Processes

In early-October, two pilot projects – Pilot-M and Pilot-D – began. Both involved relatively simple work within the application maintenance and development activities and were to be executed from onshore and offshore locations respectively. As performing maintenance activities requires higher functional knowledge and understanding of the application, along with a greater urgency for communication with the client, the onshore location was chosen for Pilot-M. Since these requirements are comparatively lower for development activities, hence, these were sent to offshore with Pilot-D. Previously, Saturn's personnel and contractors worked on the entire delivery process (see Figure 4.4). However, Apollo decided to split this process across three sites – onsite, onshore and offshore (see Figure 4.1). Onsite would host the Design Team and with the help of Saturn's contractors work on the Functional Design, while offshore would work on Technical Design, Code Development and Technical Unit Testing and would be referred as the Development Team. Onshore, as stated earlier, would work on maintenance activities and be referred as the Maintenance Team.

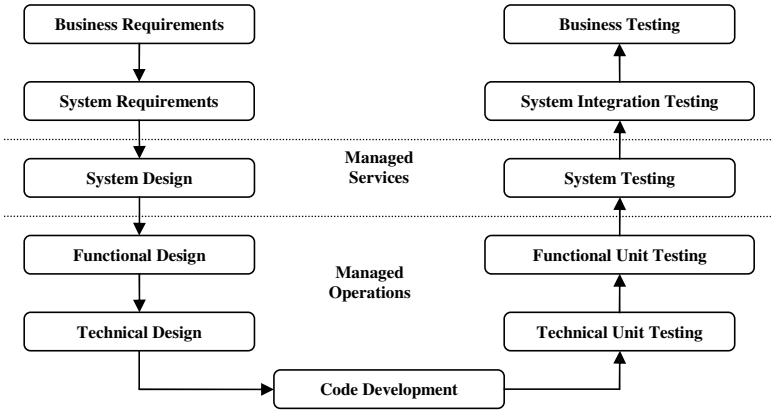


Figure 4.4 Requirements Delivery Processes at Saturn

Pilot-M was planned to last around two months (i.e. until the end of November 2007), while Pilot-D was planned till early-Jan 2008. As these pilots started, several challenges related to Apollo's planned operating model, primarily communication structure, were revealed.

For Pilot-M, the team consisted mainly of 5 onshore personnel, while the 3 offshore personnel were back in India for the month of October (their temporary visa was valid only for one month as it was filed on short notice for limited travel). Meanwhile, the onshore team still did not have enough clarity about how the Pilot-M work was divided among them, whom to approach for issues or queries within Saturn, and who had the responsibility of communicating these queries. These challenges exacerbated

the tension within the onsite team, specifically, due to the quick response time needed and strict service level agreements (SLAs) associated with maintenance activities:

> "*When we moved to the pilot project… SV [Project Lead-Onshore] said we will add YB (pseudonym) [contractor at Saturn] to help us and if you have any problems in the Billing area [a part of pilot] talk to her and if you have any problem on any other part, talk to RJ [Apollo, Functional Consultant – Onshore], which was later changed to himself, as he wanted to be the contact point for everything else… It was in the beginning of the pilot because things change quickly and pretty often… but that I think being the pilot, they were kind of searching for ways to make this work and they changed a couple of times…later on after the whole knowledge transfer period, from contractors to us, we settled in a situation in which YB was the team lead for us and above that was SV… but then what we experienced was that SV was too involved in operational activities and we had to basically answer to him instead of YB who was actually our team lead. So there were a bit of problems, bit of tension, friction if you will*" [Apollo, Technical Consultant-2 – Onshore]
>
> "*When we saw the document with the planning for pilot project, it had a completely theoretical planning… SV [Project Lead-Onshore]had planned it…but he didn't have any knowledge of the actual technology….he never checked it with us… this was planning for the whole pilot, he said 'you have these amount of incidents and on an average you need about such hours to solve an incident, so you will need total of X days to complete the pilot', which is crazy… because when an incident comes in you don't know how much time it's going to take because you don't know what the incident actually involves. When we reviewed the document, we said this is not going to happen.*" [Apollo, Technical Consultant-1 – Onshore]

Pilot-D consisted of 3 onsite and 1 offshore personnel (Team Lead – Offshore), who was now back in India, along with 5 more resources that were included into the team. It involved activities from Functional Design to Functional Testing (see Figure 4.4). Onsite personnel worked, along with the help of contractors, on Functional Design, while Technical Design, Code Development and Testing work was sent to offshore. The initial stage of Pilot-D also presented several challenges between onsite and offshore related to communication overload and misunderstandings:

> "*There is difference between how onsite team works and how offshore works… offshore I think is a kind of more mature in terms of communication protocols. If I am the project manager, I have a one team lead and then a set of developers. So we have a set of communication protocol that this is how the communication would flow… wherein, I felt that this was a little bit missing in our counterparts at onsite. During the pilot, I would say there was an over killing of communication which we raised and got resolved later… what was happening is that it was very easy for someone sitting with the client and getting some small issue and just calling up person at offshore… my Team Lead was getting very upset because he was getting a lot of calls on a daily basis without any advance knowledge… he was getting calls during lunch…where discussions are at detailed code level… he was overwhelmed and was not looking very comfortable….*" [Apollo, Project Lead – Offshore]
>
> "*For me it was difficult to explain to them [offshore] how we think about it [Component Design]…because when I came up with a design, I talk it through over the phone and they are going to develop it… but when you get back the code, you can see something that is quite different…I think communicating with them is very hard…normally when we create a design here and if you have any question you just walk over and talk with the person…but through email and phone it's much harder.*" [Apollo, Technical Consultant-1 – Onshore]

Furthermore, the communication between Apollo and Saturn regarding any queries related to both Pilot-M and Pilot-D was arduous due to a limited understanding of each other's organizational culture and operating procedures:

> "*One thing that I observed is that their [Saturn's organizational] structure internally is very, very complex… because till now I am not able to understand how the communication is flowing from top to bottom or bottom to top. The diagram they [Onshore Project and Transition Lead] showed me was horrible. I think there are lot of decision making steps, if you see how their IT department is arranged you'll find that it's not a normal structure with one boss and two people under him who are responsible*

> *but that there are different people with overlapping and unclear roles…if it is normalized…a lot of decisions can be easily taken or acted upon… instead of struggling or sticking up into bottle-necks."* [Apollo, Project Lead – Offshore]
>
> "*Saturn is a strange client… see there are certain people at Saturn that have certain status, deserved or not, and that is not being changed. If the person X says something should be like this, then it's like that. It doesn't matter if it's really like that but if he's saying so, it has to be like that and you cannot change that… There are people at Saturn that have such a status as I said and whatever they say seems to be the truth for Saturn. You can't debate that because then you run into so called bureaucracy… you can be right but then if he says you're wrong then you're wrong. You can't really work like that.*" [Apollo, Technical Consultant-1 – Onshore]

After a few weeks into the pilots, around early November, to address the communication-related challenges and to improve the delivery processes between Apollo and Saturn, three specific corrective measures were taken: (a) introduction of a single point of contact (SPoC), (b) clear responsibility for initiating discussion during any communication and (c) several review checkpoints in the delivery process. First, the SPoC was tasked with channeling and monitoring the communication flowing between onshore and offshore and between Apollo and Saturn; it proved very effective:

> *"We have three teams working during these pilots - we have our Design team at onsite, a Development team in offshore and a Maintenance team at onshore. There are two ways that offshore can get new work shifted to them. One is from the Design team and the other is from Maintenance team, both these teams have a single point of contact (SPoC) towards India, which also has a SPoC [i.e. Team Lead - Offshore]. So, that's how we currently supply our work to India and it's one of the responsibilities of these SPoCs to verify that all the steps according to the operating model are taking place… this model is something that we discussed with the key resources at both onshore and offshore team and changed."* [Apollo, Project Lead – Onshore]
>
> *"What we said is that I acted as the single point of contact (SPoC) for the offshore team at Onsite. AP [Team Lead - Offshore] had the same role offshore, so whenever there were questions about either our program or the offshore programs, the questions always ran via AP or me. Obviously when it got too much into the details then we were happy enough with allow them to continue, but it was important that we always were in the loop of what was going on, not to be surprised about strange situations or something. The official or the formal way of communicating was always via AP and me."* [Apollo, Onsite Coordinator-1 – Onshore]

Second, in the operating model that was developed during earlier months, further modifications were needed at a detailed level were needed related to communication, in order to incorporate the task division (i.e. Design, Development and Maintenance Teams of Apollo) and delivery processes across the three sites. These adjustments included, at a lower level, directions of communication flow during various stages of the delivery process; for instance, defining clear responsibilities in initiating interaction, i.e. who should take the lead during specific conversations:

> *"We had an operating model described but once we got started, one thing that we did not describe earlier was whose responsibility it was to initiate which step. What happened was that during discussions … design people said that this is what we want please pay attention to this area, etc. and development team said yes, yes …In the end, it was a classic mistake they said yes but misinterpreted what was requested. So, when the delivery was there, the result was not what was requested… So, what we did is that after we discussed with the key resources from onshore and offshore team, we decided that during any calls between Design and Development team, an important thing within that call is that the developer takes the lead… he is going to explain what he or she is going to develop. This is one thing that we did have to learn which is to make sure that we know whose responsibility it is to plan which stage and whose responsibility is it to initiate certain calls and to plan those calls…well we've now set in place and shared with all people here."* [Apollo, Project Lead – Onshore]
>
> *"Now, in our discussions, it's not that we [Design Team - Onshore] are going to tell AP [Team Lead - Offshore] what we want, but it's more that, 'AP, you have got the functional design, please tell us how you are going to create, or how you are going to build this….so what will you put in the technical*

> *development?' It is not that we explained the word for word what we wanted because they should understand from the functional design what we want… sessions are more like, 'Please tell us what you are going to build', and whenever there is a gap in what we want then we intervene."* [Apollo, Onsite Coordinator-1 – Onshore]

Finally, to counter the misunderstandings arising from dividing the delivery processes across two distributed sites (for design and development activities), several additional review steps were introduced in the interaction between Apollo's onsite and offshore teams. This allowed the teams more opportunities to rectify any misconceptions:

> *"After discussing the functional design with the onsite team, they [offshore] are going to create a technical design [peusdocode before Code Development].... this technical design is again reviewed by the Design team onsite before they [offshore] start actual code development. So, there is now a handover moment in which they [onsite] review the technical design to verify the quality of what offshore are going to develop... but more importantly to find out that what they [offshore] are going to develop is indeed what is requested in the design... As soon as approval is given, code development starts and then the developed and tested code is sent to onsite...Onsite team again reviews the code and does functional unit test to validate the functionality that has been delivered by the offshore and then passes it to Saturn"* [Apollo, Project Lead – Onshore]

4.3.3.2 Increasing Knowledge and Understanding: High Complexity Work

With several modifications to the operating model, the pilots were successfully completed – Pilot-M[10] ended around the end of November 2007 and Pilot-D ended in early January 2008. Along with the end of these pilots, the majority of contractors (around 30) left Saturn. Now, the challenge for the project was to function in a *managed operations* (MO) state, which in terms of delivery processes referred to Saturn maintaining the official management responsibility of the entire delivery (i.e. from getting Business Requirements to Business Testing, see Figure 4.4) but using Apollo for all the activities from Functional Design to Functional Testing (instead of contractors):

> *"While the first part [pilot projects] was mainly focusing on operational performance and when we were into it, starting late September, we were already working on reaching to MO…we reached it somewhere around December. So, in this period [Sep-Dec], our meetings and discussions with Apollo were about what we need to do to get to MO and then doing that, making activity diagrams, stating all the activities, periods of time when they should be done, putting a name tag on it and saying you are doing that and that and working on those activities.. After reaching MO, we needed to perform in it."*[Saturn, Project Lead]

Although the managed operations state was reached in December, in order to perform successfully in this state, Apollo needed to work on more complex requirements within both development and maintenance activities. So, around early-January 2008, along with an increase in onshore (from 5 to 8) and offshore team size (from 6 to 10 – 7 resources working on development activities, while 3 separate resources continued working on maintenance activities), a second set of pilots (with short 2-3 week duration) was launched. The new pilots were designed to push a *low volume* of *high complexity* work from Saturn to Apollo with the objective of increasing the competence – by increasing knowledge and understanding – of onshore and offshore personnel, with Saturn's applications:

> *"Now we are in what we call MO where the SPOC is continuously aligned with Saturn about what changes [requirements] are coming, what developments need to be planned in within the team… so that*

[10] The three offshore personnel – who had returned to India, in early-October (due to visa issues), after knowledge transfer – came back to onshore, in early-November (again for four weeks), to work alongside onshore personnel and gain further knowledge and experience with application maintenance. They returned to offshore as Pilot-M finished around end-November.

> *should become a rolling process. There was some backlog in maintenance work with Saturn, we decided to move it offshore... they can gain some incidents [maintenance activity] for their team ... and we know that they would not be really very productive but at least they could learn from the system...so we are now trying also to involve the Indian team in difficult maintenance work... combining more of functional consultancy along with technical development activities."* [Apollo, Transition Lead – Onshore]
>
> *"What we have done with both our onshore and offshore is that we are extending the teams and extending the areas for which we are responsible, for example, onshore team was responsible for billing, but now they are also responsible for e-messaging… team size has increased from 5 to 8 people…also new work package has been delivered to offshore, which was enough deliverables for now"* [Apollo, Project Lead – Onshore]

As these new pilots proceeded, they provided Apollo's onshore and offshore personnel the opportunity to learn more about Saturn's application in compensation for the accelerated knowledge transfer earlier.

4.3.3.3 Restructuring Retained Organization: Roles and Internal Processes

From Saturn's perspective, in the initial months of the first pilots, they were constantly reviewing the situation in weekly meetings with Apollo. Around the end of October, they had already released over 30 contractors but a few still remained. After assessing the situation carefully, Saturn's management learned and understood the need for several changes in their retained organization in order to adapt it to working successfully with Apollo. Saturn's primary concerns were about the loss of expertise (with the departure of the contractors) and adapting their IT organization to operate in a complex distributed setting (i.e. onsite, onshore and offshore). So, in early-January 2008, with the initiation of the second set of pilots – functioning in the managed operations state, requiring intense cooperation with Apollo – Saturn began to evaluate two modifications to its retained organization: requisite roles and responsibilities of its retained personnel and better internal processes.

Two challenges were encountered related to the roles of retained personnel. First, as Saturn had never experienced offshore outsourcing, their internal organization was still learning to operate and communicate in such a setup:

> *"For pilot [Pilot-D], offshore only does a part of the delivery process… but all the steps, [up to System Design, see Figure 4.4] before offshore can actually develop, need to be finished… and you lose some flexibility there which you can have when everyone is onsite so that designer is next to developer and they can request that, 'Although my design is not entirely finished, you can maybe start with that [development] and I will explain to you the rest which I haven't written yet'. This you cannot do when we work offshore, your design have to be finished or have to be in such a state so that they can start development. And that is something that we see that Saturn is struggling with because, for example, for some of the work we have done in our offshore pilot functional design was signed off by them [Saturn] almost three weeks after the start of the pilot... So there was some sort of risk that we take because we don't know whether it will get signed off or not ...and if there is still any change needed to be made. But the client is aware of this risk."* [Apollo, Project Lead – Onshore]
>
> *"Normally we would just go to the programmer and tell how it work, now we have to make a document and describe in very good detail that what is happening, what is the problem, how it can be solved, so it takes a lot more time and then send it to SI [SPOC-Onsite] and he will distribute it to India, and we will get a date for when he says it is ok and we will look into it over one or two days and you will get an answer back about what costs are and what solution we have picked to solve the problem... for a lot of programs which had major errors there were no documents but it did not matter because you know how it works and you can explain it to the programmer that it works like this and you show it on the*

monitor...now you have to describe it on paper and it is very very difficult and it will take a long time to get used to." [Saturn, Functional Consultant]

Second, Saturn's management realized that a broader fundamental shift was required, in terms of the retained organization's perspective, from *actually doing* the activities themselves to *monitoring* that Apollo is performing these activities acceptably. This led Saturn to work on redefining their retained organization. By mid-February, a new portfolio of roles and responsibilities was developed and ready for implementation:

> *"That [reorganization] is really indeed the difficult part. One of the starting points from our angle is to build a director's organization, for example, now we get a lot more into a situation where the Apollo is doing the design and ours is much more of a review role. So, our work goes from creating these designs to reviewing them.... My strong view is that director's organization has two dimensions – the dimension of knowledge and the dimension of process control. By the nature of work that people [Saturn personnel] were doing [during pilots], they were sort of either doing these design directing activities such as whether this design is possible to maintain in future, is it up to standards etc. or doing some process control like service level management or project management that whether Apollo is doing the job well, are they remaining within budget etc. So, we have identified and made new role descriptions for the entire IT supply organization... we harmonized them across all outsourcing teams and have identified new roles. We call them specialists and professionals. Specialists are the people who will work on design activities, and have to do with designing the systems, while Professionals are the ones who work on service level control etc. Besides that, forecasting becomes much more important, so we have what we call a forecasting professional, as the person who creates the work forecast for our vendors… These roles are more a description of what we saw ourselves doing and now we're going to implement them. Based on the definition of those two dimensions, these roles become clear now…and were latent earlier when we started the project, evolving in a natural way."* [Saturn, Transition Lead]

Along with the changes in roles within the retained organizations, improvements were needed for some internal processes; specifically, in forecasting the workload. This was required in order for Saturn to keep Apollo updated on the expected future workload and to assist the latter in planning and maintaining its capacity:

> *"One of the key issues for Saturn is forecasting… it is our responsibility to forecast the work and say that for the next month we will have the following changes in these projects and Apollo will say ok we will need about 10 people for that and we say yeah, that is okay... we are not good at that yet. I am happy that the bigger projects starting now are feasible because I know exactly what we are going to do and I can forecast it well but two months ago, I wasn't able to do that and we should have done it." [Saturn, Project Lead]*

After the period from mid-October 2007 to mid-February 2008, following the completion of several modifications in the operating model to achieve an effective governance structure, the acquisition of significant experience with complex requirements and determination of the roles needed in the retained organization, the relationship between Saturn and Apollo was ready to advance to the last phase of transition.

4.3.4 Phase III: Routinize

By mid-February 2008, the second set of pilots was completed and the project was running smoothly in the managed operations state. With adaptations in place at both the firms for improving the collaborative performance, a set of final pilots were executed. In the new setup, a *high volume* of *high complexity* work was transferred between Saturn and Apollo. This phase is referred to as *Routinize*

because its objectives were: (a) to swiftly validate the recent modifications at both the firms with simulated service delivery stage conditions (i.e. with performance level expectations as in actual service delivery, see Figure 1.1) and (b) to allow both firms to acquire sufficient experience and maturity with the setup (i.e. with modified roles and delivery processes) in order to expedite reaching the service delivery stage. This phase lasted for around two months from mid-Feb to mid-April 2008.

4.3.4.1 Standardizing Modifications: Pseudo-Service Delivery Stage

While conducting the second set of pilots, from early-January to mid-February 2008, Saturn and Apollo constantly discussed maintaining requisite performance levels of managed operations and progressing to *managed services* (MS), which referred to the end of transition and beginning of the actual service delivery stage (see Figure 1.1). Contractually the end of transition meant that Apollo would bear official responsibility for all the activities from System Design up to System Testing in the delivery process (see Figure 4.4). Until mid-February 2008, Apollo was only handling activities from Functional Design up to Functional Testing, according to the contract, and did not have the official responsibility for these delivery processes. But with the first and second set of pilots, Apollo's personnel, specifically the onsite team, had acquired a substantial understanding of Saturn's applications. Both firms agreed that it was an appropriate juncture to advance to the next step. So, from mid-Feb onwards, in order to promptly reach managed services and validate the modifications carried out, a final set of pilot projects were launched that involved working in the simulated managed services conditions:

> *"... Apollo did not take over anything yet. We are still in MO, so Saturn is the responsible party. We are though working very intensively with Apollo, they're not in-charge yet but most technical and functional consultants now are Apollo personnel (instead of contractors). So, to be exact, no responsibilities have shifted yet but in practice, we have been working on several pilot projects, pilot MO, pilot MS, pilot statement of work kind of way of working...there are official differences between MO and MS. But, for example, for the MS pilots, we kind of, act as if we have shifted the responsibility... So we say well these are the requirements, please do a system design on that, make a technical design, build and test your code... do the system test and send it back [MS way of working]… So what we do now in practice, for some of the coding we say please do the testing yourselves and for some of the projects we say well please do the design yourselves and for some of them already we say do both… So we have some projects that we are working on in the MS way of working and for that part we have shifted responsibility to Apollo and we are happy to do so because when we have an overload of work at this point, we can easily talk to SV [Apollo, Project Lead – Onshore] about it and shift responsibility to Apollo…for example, one major change in the last month is that for the CRM team, what we did is to shift all responsibility to Apollo. So now, if we have CRM requirements, they will come through me and I shift it to SV and he takes the lead in completing it... he is the one delivering, not us."* [Saturn, Project Lead]

From Apollo's perspective, these pilots aimed at not only strengthening the knowledge and understanding of its personnel, but also providing significant experience in managing the delivery processes with Saturn.

4.3.4.2 Acquiring Experience: Ramp-Up

In the period from mid-Feb to mid-Apr 2008, ramp-up started, i.e. the volume of work was increased and new vendor personnel were added to the teams. While Apollo's onsite team size remained the same, onshore team size increased from 8 to 11 and offshore from 10 to 15. This ramp-up of new personnel, mostly junior developers new to the project, presented a challenge in terms of their learning capacity, the need to, in a very short period, absorb knowledge related to the outsourced activities and delivery processes and the need to immediately become productive. Although, there were no serious issues reported, there were some concerns related to the inexperience of Apollo's new personnel as compared to the contractors that they were replacing:

> *"Apollo very easily replaced programmers with a lot of knowledge [i.e. contractors] on our side with their people with a lot less knowledge... and that did not work well, we had two incidents that almost caused system failure issues because the new programmer was on it with less knowledge and he started an application that should not have started and later tried to manually correct it but could not and changed some things in the system, we had to take help of our experienced contractors to fix it"* [Saturn, Functional Consultant]

From Saturn's perspective, to reach managed services state, it was critical to implement and test the redefined roles in its retained organization. Therefore, from mid-February 2008 onwards, these roles and responsibilities were *unofficially* applied for administering operations during the simulated managed services state. This was implemented in parallel with the ramp-down of the few remaining contractors, which further increased pressure on the retained personnel. Initially, applying this reorganization created anxiety among Saturn's retained personnel with regard to their job security, which made it slower for them to acquire sufficient role practice or experience to perform reasonably well. This was in part due to a certain period in which they had to manage twin roles (the previous one as well as the redefined one), thereby somewhat overwhelming them. Although, it took longer than expected to adapt to modified roles and the increased workload in a novel setting (offshore outsourcing), both these issues subsided and allowed the retained personnel to develop their new skills sets:

> *"In reorganization, several people got taken out of their place [previous roles], …so this job insecurity came from the reorganization...and that had an enormous effect on the ongoing projects...it [reorganization] is more or less a big bang scenario...and there is continuous tension between project management and the organic process of change [modified roles], I think we gave less stress on the project aspect by allowing them to take lot of time to grow into their new roles…which can be debated…as I see now that people have got so much space... and they still say I have to grow in my new role and they keep on growing in their new role and somehow that process doesn't come to end...but it was important to give them the space"* [Saturn, Transition Lead]

During this phase, all Apollo and Saturn personnel were required to absorb and standardize the modifications in their governance setup and delivery processes to expedite performance. With two months of working in the simulated managed service environment or pseudo service delivery state, both firms validated their structural arrangements and acquired the critical experience in jointly performing delivery processes.

4.3.5 Outcome: Service Delivery Stage

By mid-April 2008, without any further significant complications, the actual service delivery state was successfully achieved, with both firms satisfied with the performance.

> *"In the meeting… they [business manager] said well it's a lot of projects [requirements], how are you going to manage and we said to them, well we have like 7 extra people already here and there will be 4 more people coming … and they did not notice us having those problems with the resources available and getting new people up to speed. They did not see a drop in delivery quality… or in timing or budget consumption. So, the business did not notice our shifting to MS and they did not notice anything with offshoring… so that is for us a signal that what we did we was kind of okay because else the business would have complained to us and when they would have done so then that would trigger us to do things differently, but since the business did not complain and we had only some minor issues internally within the department, there are not that many things that I would change because the business did not even notice us changing."* [Saturn, Project Lead]

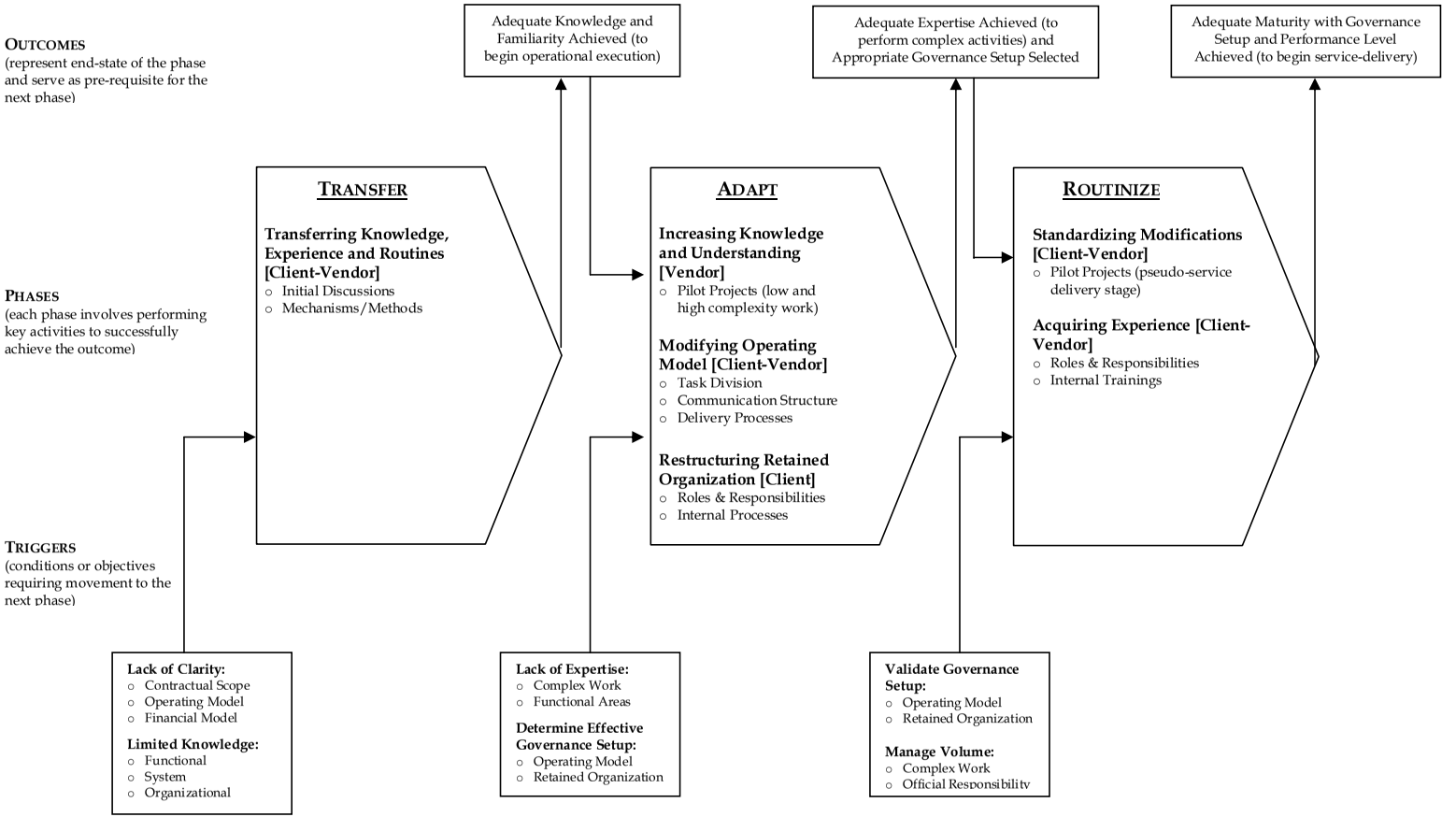


Figure 4.5 Transition Process Model: Phases, Triggers, Key Activities and Outcomes

4.4 Transition Process Model

In this section, we introduce and explain our process model of transition developed from the longitudinal case study (see Figure 4.5). A process model focuses on explaining how and why a certain outcome state is achieved by a preceding sequence of actions, events or phases (Markus and Robey, 1988; Mohr, 1982; Sabherwal and Robey, 1995; Van de Ven and Poole, 1995). For this study, we adopt a process model approach for two reasons. First, due to its appropriateness to answer our research question: how the transition stage proceeds and why? Second, as Markus and Robey (1988: 593) suggest, empirical process models complement variance models (by capturing certain social phenomenon, which are challenging to study with the deterministic approaches) and allow for better generalizability as their predictions "may correspond more faithfully to actual events in organizations than do the typical predictions of variance formulations". In addition to determining the sequence of phases, our model also identifies the temporal order of key activities that influence the success of each phase and the subsequent phases, thereby, the transition process overall. In explaining our transition process model and related propositions, we proceed in two steps. First, we explain each phase by discussing their dominant organizational processes, key activities, triggering conditions and outcomes, while grounding these in the relevant literature. Second, we explain the logical progression (i.e. order and sequence) of the phases by using Van de Ven and Poole's (1995) life-cycle archetype as the foundation for the transition process.

4.4.1 Phases: Organizational Processes and Key Activities

As stated earlier, based on the foundations of knowledge management and organizational learning literature, transition is conceptualized as a culmination of four organizational processes: transfer, learning, adaptation and routinization. Although, to some extent, these processes are present in all the phases and are closely inter-related, each phase has a distinct characteristic depending upon its dominant organizational processes. While the three phases get their name from their respective dominant process, learning is spread across all the three phases with the learning mode (i.e. mechanism used for learning) changing in each phase. The next sub-sections discuss the three phases in detail along with propositions related to them.

4.4.1.1 Transfer

The first phase, *transfer*, is triggered by the lack of clarity related to the actual scope of outsourced activities, the operating and financial model, and limited knowledge (functional knowledge referring to client's business processes and systems knowledge referring to client's IT systems) linked to the outsourced activities and the organization. Although, contractual negotiations involve overarching discussions on the scope of activities and financial agreement, operational details regarding the impact of outsourcing decision still need to be clarified between middle-managers at both the client and vendor firms in the first few weeks following the contract signing (refer the quote by Saturn,

Project Lead in Section 4.3.2). Similarly, a higher-level understanding of outsourced activities exists during contract signing yet detailed knowledge related to these activities and their interdependencies need to be acquired and understood. This phase serves, for middle managers and IT personnel at both firms, to align their understanding, clarify doubts pertaining to the division of roles and responsibilities related to outsourced activities, and for the vendor firm to gain knowledge, familiarity and understanding of outsourced activities to start performing simple tasks. Therefore, the majority of this phase is dedicated to the key activity of transferring vast amounts of accumulated knowledge (both explicit and tacit), experiences and routines; making transfer the dominant organizational process. The complexity arises as the transfer process, during transition, not only involves broader organizational knowledge related to outsourced activities but also specific organizational routines, for instance longstanding best practices (Szulanski, 1996), related to performing the outsourced activities. Organizational routines are "interlocking, reciprocally triggered sequences of skilled actions" (Cohen and Bacdayan, 1994: 554) and underlie much of the conceptions and explanations on organizational action (Cyert and March, 1963). Transferring these routines, which are established and institutionalized over several years, in an inter-organizational setting such as outsourcing, is complicated mainly because they are highly contextualized, have an emergent quality (such as accumulated experience) and partial inarticulacy (such as tacit knowledge) (Cohen and Bacdayan, 1994). This makes it extremely difficult for vendor personnel to understand and may require client personnel to engage in extensive communication (Hawk et al., 2009) to overcome the challenges. For a successful transfer, client personnel need to decontextualize, articulate, codify and explicitly present knowledge, experiences and routines to the vendor personnel so that these can be absorbed and understood. This is carried out both during initial meetings and discussions between both firms and during officially planned knowledge transfer sessions.

In this phase, during knowledge transfer sessions, challenges arise related to expert (i.e. the contractors working at the client firm) availability and motivation (Ko et al., 2005). Although this is common to several transfer scenarios (where the expert, or provider of knowledge, has a negative incentive to transfer knowledge), it gains prominence under an aggressive timeline in which this phase needs to be implemented during transition. Expert availability needs to be jointly and cautiously planned well in advance, as experts need to conduct knowledge transfer along with carrying out their normal operational workload. Furthermore, during this phase, several different mechanisms or methods such as, job-manuals, trainings and job shadowing etc. (Carmel and Beulen, 2005; Slaughter and Kirsch, 2006; Oshri et al. 2007; Chua and Pan, 2008; Hawk et al., 2009) and specialized tools such as, a knowledge management system (Alavi and Leidner, 2001) are used to effectively transfer and track knowledge under a constrained time period. Client personnel utilize these mechanisms to transfer relevant knowledge, experiences, and routines to vendor personnel who must absorb, learn and acquire them. Learning, during this phase, primarily occurs at individual level in the didactic and observational learning mode. Didactic learning refers to principle-based learning

or learning-by-instructions (Nadler et al., 2003), which occurs when job-manuals (or documents linked to outsourced activities) or training sessions are provided to vendor personnel. While with job shadowing, observational learning or learning-by-watching (Bandura, 1986; Yi and Davis, 2003) occurs as the client personnel demonstrates and performs a certain outsourced activity in front of the vendor personnel. The phase ends when, utilizing these learning modes, the vendor personnel achieve significant knowledge and understanding levels to be able to start performing simple outsourced activities on their own, usually in the form of pilot projects.

Thus, based on the above discussion:

> **Proposition 1a:** The *transfer* phase is triggered due to a lack of clarity and limited knowledge and ends with achieving adequate knowledge, familiarity and understanding to begin operational activities (i.e. initiate first pilot projects).

4.4.1.2 Adapt

The second phase, *adapt*, is triggered by a lack of expertise of vendor personnel in performing complex outsourced activities and determining an effective governance setup involving the operating model and retained organization. Although this phase begins when the vendor firm starts performing simple activities, in the form of first pilot projects, they do not yet have the knowledge and experience levels required to perform complex activities. Furthermore, as the relationship becomes operationally active with the vendor performing certain outsourced activities and the client monitoring and integrating those outputs into their firm, middle managers at both the firms need to identify and finalize appropriate post-contract structural arrangements (Lacity and Willcocks, 2000; Beulen et al., 2006) to govern the relationship between them. This phase serves to fulfill these requirements by including three key activities: vendor personnel increasing their knowledge and understanding by using pilot projects (for both simple and complex tasks), both firms (but primarily the vendor firm) modifying the operating model and the client firm reorganizing their retained organization.

Adaptation is the dominant organizational process in this phase and occurs both at individual and organizational levels (primarily related to the parts of the organization involved with or impacted by the outsourcing initiative). At the individual level, building on the knowledge and understanding gained during the earlier phase, vendor personnel start working on the pilot projects in collaboration with the client personnel. These pilot projects provide them with an opportunity to closely interact, influence and adapt each other's perspectives, thereby, leading to the development of shared experiences, mutual knowledge and common understanding (Cramton, 2001; Vlaar et al., 2008) related to performing outsourced activities. Furthermore, as the vendor personnel continue working on the pilot projects for a few months, learning occurs in the form of experiential learning or learning-by-doing (Argote, 1999; Kolb, 1984), which allows the vendor personnel to deepen and broaden their knowledge and understanding in order to perform complex activities within the functional areas

(such as application development and maintenance activities related to human resources, customer relationship management or finance) involved in the outsourcing contract.

At the organizational level, adaptation occurs to both structures and processes at both client and vendor firms for managing the relationship (Beulen et al., 2006). Along with performing the pilot projects, in order to determine the best possible governance arrangement, both firms constantly adapt as they keep learning, evaluating and modifying the current arrangements (Fiol and Lyles, 1985; Willams, 2007). The modifications to the operating model, which involves task division (Mirani, 2007), communication structure (Sabherwal, 1999) and delivery processes, are mainly led by the vendor firm and inspired from two sources: learnings from the current engagement derived during the pilot projects and learnings from past knowledge and experience accumulated by managing transitions at several clients, similar to the alliance capability possessed by firms (Kale et al., 2002; Draulans et al., 2003). Based on these learnings, elements of the operating model are adapted to better coordinate and control activities across distributed locations (Carmel, 1999; Choudhury and Sabherwal, 2003) and reduce instances of miscommunications (Cramton, 2001). The restructuring of the retained organization involves changes in the roles and responsibilities of the client personnel and internal processes (such as forecasting workload) to improve vendor management at the client firm (Feeny and Willcocks, 1998; Cullen and Willcocks, 2003). This restructuring bears resemblance to organizational adaptation in response to an environmental condition, in the form of an outsourcing initiative, and requires the organization to "…learn new patterns of communication to facilitate the flow of different information… integrate new members and learn new work routines" (Haveman, 1992: 50). The phase ends when both firms, to a large extent, are confident in their post-contract governance arrangements and vendor personnel have achieved knowledge and understanding levels to perform in pseudo (simulated) service delivery conditions.

Thus, based on the above discussion:

> **Proposition 1b:** The *adapt* phase is triggered due to a lack of expertise and to determine an effective governance setup for managing the relationship, and ends with achieving an adequate expertise (to perform complex outsourced activities) and an appropriate governance setup.

4.4.1.3 Routinize

The third phase, *routinize*, is triggered by the need for both firms to validate adaptations to their governance setup and to manage a relatively high volume of outsourced activities (as required to begin the service delivery stage). This phase serves to fulfill these objectives by involving two key activities: standardizing modifications to the governance setup with another round of pilot projects (based on the simulated service delivery conditions) and acquiring experience for both client and vendor personnel to perform efficiently with their modified roles and responsibilities and changed organizational processes.

Routinization is the dominant organizational process in this phase, as both firms need to absorb, routinize and embed into practice (Zollo and Winter, 2002; Lazaric and Denis, 2005) the changes conducted in the previous phase to their governance arrangements. Without instilling these modifications into their daily work habits and acquiring maturity with the governance setup, it is impossible for vendor personnel to complete a large volume of complex outsourced activities and produce performance levels necessary to begin the service delivery stage. Similarly, client personnel need to not only understand but also incorporate and become accustomed to their new roles and internal processes during the final pilot projects with pseudo service delivery conditions. Routinizing these changes to structures and processes leads to the stability of governance arrangement and allows the vendor personnel to gain performance efficiency (Gersick and Hackman, 1990; Leidner, 1993; Ohly et al., 2006), which helps in managing the increased volume of outsourced activities. Furthermore, along with the increase in work volume, a rapid growth in the number of vendor personnel also takes place, which is referred as ramp-up or scale-up. As the new vendor personnel strive to acquire experience and achieve higher knowledge and experience levels with the help of internal trainings, learning plays a significant role and occurs first in a didactic and observational learning mode and later in an experiential learning mode. Moreover, experiential learning gains further importance as client personnel, managing an increased workload, are busy acquiring experience related to their new roles and responsibilities with repeated execution in order to improve their productivity. The phase ends when both firms have gained substantial experience with the governance setup in order to handle an increased volume and their joint performance reaches satisfactory levels (as agreed upon in the contract) to begin the actual service delivery stage.

Thus, based on the above discussion:

> **Proposition 1c:** The *routinize* phase is triggered by the need to manage a high volume of outsourced activities and to validate the governance setup, and ends with achieving adequate maturity with the governance setup and adequate performance levels (as contractually required to end transition and begin service delivery stage).

4.4.2 Phases: Order and Sequence

In their highly cited, conceptual article on explaining organizational change, Van de Ven and Poole (1995: 511-512) introduce four basic types of process theories to "explain how and why change unfolds", each with "fundamentally different event sequences and generative mechanisms", which they refer to as motors. Among the four, the *life-cycle* archetype, which explains the organizational development from initiation to termination, closely fits with transition; which has an initiation (contract signing) and contractual termination (reaching service delivery stage). The next paragraph shows how the transition process model satisfies the life-cycle archetype's criteria related to the event sequence (i.e. how phases proceed?) and generative mechanism (i.e. why phases proceed in a particular way?).

Van de Ven and Poole (1995: 514-515) suggest that for the life-cycle archetype, events progress in "a single [linear and irreversible] sequence of stages or phases" and "characteristics acquired in earlier stages are retained in later stages". The transition process model fulfills these two conditions as the three phases *transfer, adapt* and *routinize* follow a linear sequence (rather than recurrent or discontinuous sequence that belong to other archetypes) and the characteristics acquired in each phase (such as knowledge gained in the *transfer* phase or modifications made to the operating model in the *adapt* phase) are retained in the later phases. The generative mechanism for the life-cycle archetype, according to Van de Ven and Poole (1995: 515), is governed by "an underlying form, logic, program, or code that regulates the process of change and moves the entity from a given point of departure toward a subsequent end". For the transition process model, the goal (i.e. performance levels for reaching the final-end state of transition and the beginning of the service delivery stage) is known and stated in the contract. This goal determines the underlying logic that guides the process to achieve the final-end state. Furthermore, they suggest that the progression of stages follows a certain sequence because achieving the final-end state "requires a specific historical sequence of events", suggesting that "each stage of development is seen as a necessary precursor of succeeding stages" (515). The transition process model conforms to and illustrates this criterion, as each phase in the model is necessary and focused on cumulatively adding features required to achieve the final-end state. Furthermore, the outcome of each phase serves as a pre-requisite to begin the next phase. The *transfer* phase involves transferring knowledge and understanding of the outsourced activities and forms the foundation on which the subsequent phases and the overall transition are established. Without this phase, it will be challenging for vendor personnel to perform even simple operational work. Next, the *adapt* phase involves making critical modifications in the governance arrangements and increasing the knowledge and expertise levels to handle relatively complex outsourced work. Without conducting these two key activities, however minor they may be, high complexity work cannot be executed, thereby the *routinize* phase or service delivery stage cannot be achieved, as they require higher performance levels by the client and vendor personnel. Finally, the *routinize* phase allows the standardization of changes in the governance arrangements and helps both firms to acquire considerable experience in handling high complexity and high volume of outsourced work. Without going through this phase, however minor or short in duration it may be, requisite performance efficiency to handle high volume of work and performance levels needed to begin service delivery stage cannot be achieved. Therefore, to complete transition and start the service delivery stage, these three phases must not only be present but also follow the suggested sequence (i.e. it is necessary that these phases occur in the presented sequence). This suggests that successful transition cannot occur if any of the phases are absent or if they do not follow the sequence presented earlier (in Section 4.4.1).
Thus, based on the above discussion:

> **Proposition 2:** In an outsourcing setting, the transition process will proceed in three sequential and conjunctive phases – *transfer*, *adapt* and *routinize*.

This concludes the findings from field-study on RQ1, but we will again refer to the insights from this study in the Conclusion (Chapter 7), particularly in Section 7.2.2 Transition Performance.

5 TRANSFER MECHANISMS AND TRANSITION PERFORMANCE: LABORATORY EXPERIMENTS WITH OUTSOURCING[11]

The field-study (Chapter 4) found *transfer* to be the first and most fundamental phase (since it forms the foundation on which the next phases follow) within the transition stage of an outsourcing relationship. The key activity during this phase involves the transfer of knowledge, experiences, and routines related to the outsourced tasks from client to vendor personnel. In essence, this suggests that the transfer of knowledge, experiences and routines represents the most consequential activity for transition as well as outsourcing success. Therefore, in this chapter, we continue our investigation by closely examining the organizational process of transfer and its influence on transition.

Transferability of knowledge, learning and capabilities is at the heart of the knowledge management and organizational learning literature (Kogut and Zander, 1992; Spender and Grant, 1996; Grant, 1996; Argote and Ingram, 2000; Argote et al., 2003). Several scholars have studied knowledge transfer in a variety of contexts and environments (e.g. Mowery et al., 1996; Szulanski, 1996; Simonin, 1999; Reagens and McEvily, 2003) confirming the significance of this topic for both academics and practitioners. During the transition process, transfer is usually done by utilizing various transfer mechanisms or methods that are used for transferring knowledge, experience and routines. We focus on the three most fundamental and commonly used transfer mechanisms – observation, training and manual (Carmel and Beulen, 2005; Slaughter and Kirsch, 2006; Chua and Pan, 2006; Hawk et al., 2009). This study addresses the following research question:

RQ 2: *What influence do transfer mechanisms have on transition performance, and why?*

Using an innovative experimental design, by recreating several key elements of a real-world outsourcing scenario and organizational tasks in the laboratory, this study provides insight into the effectiveness of these transfer mechanisms and examines underlying explanations for the variation in transition performance. The next section, presents the theoretical background and hypotheses, followed by a detailed description of the experimental design and method. Subsequently, we present the findings, and discuss their possible explanations, implications, and limitations along with directions for future research.

5.1 Theoretical Background and Hypotheses

5.1.1 Transfer Mechanism

During transition, the client and vendor firms utilize several transfer mechanisms (Chua and Pan, 2006), which are methods used for transferring knowledge, experiences and routines. Transfer

[11] This study was presented as a full paper at the OCIS sponsored session at the *Academy of Management Meetings* 2009, Chicago

mechanisms have received attention in the knowledge transfer and organizational learning literature. Argote (1999: 145) suggests that knowledge can be transferred "by moving people, technology or structure to the recipient organization or by modifying the people (e.g. by training), technology or structure of the recipient organization". Although several studies recommend utilizing multiple types of transfer mechanisms (Argote and Ingram, 2000; Galbraith, 1990), a substantive theoretical categorization of these mechanisms is lacking (Slaughter and Kirsch, 2006). In Slaughter and Kirsch's study on software process improvement, "one of the first to conceptualize and empirically investigate knowledge transfer portfolios" (2006: 302-303), they present these portfolios along two dimensions – composition and intensity. Composition refers to the types of knowledge transfer mechanisms used, while intensity refers to the frequency with which mechanisms are utilized.

To categorize transfer mechanisms, Slaughter and Kirsch (2006) build on Grant's (1996) work, which suggests that there are two fundamental categories of mechanisms for knowledge transfer: *directions* and *organizational routines*. Directions-based mechanisms provide "explicit rules and instructions". For instance, standard operating procedures or plans are used to "transfer explicit knowledge" (2006: 304). Organizational routines-based mechanisms promote knowledge transfer without the need for an explicit means of communication, thereby representing "implicit means of transferring knowledge" (2006: 304). It is important to note that Slaughter and Kirsch (2006) focus only on the transfer of knowledge in an organizational context (various units within a department) as compared to transition, which involves transfer of knowledge as well as specific routines related to the outsourced activities within an inter-organizational context. However, due to the simplistic nature of this categorization and the lack of a superior typology, we prefer to use Grant's categorization for transfer mechanisms.

Within an outsourcing relationship, during transition, examples of directions-based mechanisms include – using written rules, documentation, formal procedures, templates, check lists, formal training and standards etc. (Lacity and Willcocks, 2000; Cullen and Willcocks, 2003); while examples of organizational routines-based mechanisms include – observing experts, job shadowing and embedding in client teams etc. (Chua and Pan, 2006). In this study, we focus on three fundamental transfer mechanisms – manual (documentation), classroom training (formal training) and observation (observing and interacting with experts). These three mechanisms are most commonly used in diverse organizational settings, including transition (Chua and Pan, 2006) and widely referred in knowledge management literature (Argote, 1999). Manual and training are direction-based mechanisms, while observation is an organizational routine-based mechanism. Although complex combinations of these transfer mechanisms are actually implemented in practice, we determine and compare their individual effects on transition performance for two reasons. First, in order to comprehend the influence of sophisticated combinations of transfer mechanisms, we first need to understand their relative strengths and weaknesses. Second, while several studies in organizational and IS training literature focus on comparing certain variations within each of the mechanisms (see Arthur et al.,

1997; Kang and Santhanam, 2003; Simon et al., 1996; Yi and Davis, 2003), a comprehensive study providing a comparison among these fundamental mechanisms is needed.

5.1.2 Transfer Mechanisms and Transition Performance

Transition, which starts with the implementation of transfer, officially ends when vendor firm assumes the entire responsibility for outsourced activities and achieves operational performance, i.e. performs at certain pre-defined levels agreed upon in the contract. However, Cullen and Willcocks (2003: 151) state that "irrespective of the official start and end dates, transition actually begins much earlier and ends much later, and if not managed properly may not end at all". To determine the influence of transfer mechanisms on transition, we measure transition performance with two dimensions – *transition duration* (length of transition period) and *steady state performance* (performance achieved at saturation). The transition duration represents the total time taken by the vendor organization to perform outsourced activities at a certain pre-defined benchmark performance level. Due to the high costs involved, both client and vendor organizations prefer that the transition duration is as short as possible within acceptable quality, which makes it an important component of transition performance (Gartner, 2005). Steady state performance, on the other hand, represents the final saturated performance level of the vendor firm after taking over the outsourced activities. This performance is usually achieved during the service delivery state (see Figure 1.1) but is largely dependent on how the transition period emerged (Carmel and Beulen, 2005; Lacity and Willcocks, 2000). After a certain pre-defined performance level during transition is achieved, the vendor organization continues to realize performance improvement[12]. Since, the final performance level reached is influenced by how transition progressed; we consider it is as another measure of transition performance. So, for a higher level of transition performance, the transition duration should be shorter and the steady state performance better.

Despite the lack of any previous study directly comparing the three transfer mechanisms, it is plausible to expect a trend in their influence on transition performance. Borrowing from media richness theory (Daft and Lengel 1986) and social presence theory (Short et al. 1976), which suggests that face-to-face communication is a rich medium with high social presence, we can assume that a mechanism using face-to-face communication (observation and training) will lead to better transition performance, as compared to text-based communication (manual), which is a rather lean medium with low social presence. Along similar lines, Argote et al. (2003: 574) suggest that tacit knowledge, which is difficult to articulate (Nonaka, 1991), is challenging to transfer as compared to explicit knowledge and "is best transferred through rich communication media such as observation rather than through more explicit media". They further state, citing Nadler et al. (2003: 579) that "experience observing someone perform a task is more beneficial for subsequent performance than other types of experience, such as that acquired through classroom training. Experience individuals acquire by

[12] These performance gains are one of the primary reasons why client firms outsource activities.

observing someone perform a task provides opportunities for them to acquire tacit (Nonaka 1991) as well as explicit knowledge. Individuals who learn through observation may not be able to articulate what they learn but are able to transfer the knowledge to a new task".

Furthermore, contextualization, which, in relation to learning and knowledge transfer, refers to providing instructions that are closely embedded in a particular context, increases intrinsic motivation for learning and the amount learned in a fixed time period (Cordova and Lepper 1996). During transition, client personnel are attempting to transfer knowledge, experiences and routines related to outsourced activities as such contextualization of these insights is critical for vendor personnel to replicate the activities. Observation, which is a routine-based mechanism, allows vendor personnel to carefully see the actual task, experience the application of instructions provided by the client, and interact freely to resolve any queries through illustration. These acts assist in contextualizing the instructions received by vendor personnel during transfer thereby, generating interest and reinforcing their importance. Again, Argote et al. (2003: 576) comment that "learning by observation is an example of [such] indirect learning. Instead of accumulating knowledge directly, an individual accumulates knowledge by watching another person perform a task". While classroom training does provide a certain level of contextualization, it fails to anchor the instructions to a demonstration of the actual task. A manual, which is based purely on documentation, does not allow for interaction between client and vendor personnel, thereby, making it extremely low in contextualization of the instructions.

For the transition duration, we expect two sets of hypotheses. First, by utilizing a transfer mechanism, client personnel will convey knowledge, experiences and routines, however little they might be, to the vendor personnel. Therefore, it is not surprising to expect that using a transfer mechanism should likely allow the vendor to reach the pre-defined benchmark performance level faster than it took the client to reach the same performance level. This also serves as a manipulation check for the transfer mechanisms. Thus, in comparing the client's to the vendor's performance:

> *Hypothesis 5.1 (H5.1): Utilizing any transfer mechanism (i.e. observation, training or manual) will result in a shorter transition duration as compared to the time taken by the client to reach the same performance level.*

Second, among the transfer mechanisms, based on the theoretical arguments discussed above, we expect that:

> *Hypothesis 5.2a (H5.2a): Utilizing observation will result in a shorter transition duration than using training, a manual or no transfer mechanism (i.e. control condition-baseline)*
>
> *Hypothesis 5.2b (H5.2b): Utilizing training will result in a shorter transition duration than using a manual or no transfer mechanism (i.e. control condition-baseline)*
>
> *Hypothesis 5.2c (H5.2c): Utilizing a manual will result in a shorter transition duration than using no transfer mechanism (i.e. control condition-baseline)*

For steady-state performance, similarly, we expect two sets of hypotheses. In comparing the client's to the vendor's performance:

Hypothesis 5.3 (H5.3): Utilizing any transfer mechanism (i.e. observation, training or manual) will result in better steady-state performance as compared to that achieved by the client.

Second, among the transfer mechanisms, based on the same arguments as for the transition duration, we expect a similar trend:

Hypothesis 5.4a (H5.4a): Utilizing observation will result in better steady-state performance than using training, a manual or no transfer mechanism (i.e. control condition-baseline)

Hypothesis 5.4b (H5.4b): Utilizing training will result in better steady-state performance than using a manual or no transfer mechanism (i.e. control condition-baseline)

Hypothesis5.4c (H5.4c): Utilizing a manual will result in better steady-state performance than using no transfer mechanism (i.e. control condition-baseline)

5.2 Method

As discussed in Section 3.2 (Chapter 3), to study a real-life phenomenon in the laboratory, it is important to capture specific essential characteristics of the phenomenon in the experimental design. In these experiments, the outsourcing scenario and the experimental task must reproduce several key elements of their real-world counterparts. This section outlines the criteria used to recreate an outsourcing scenario and to select the experimental task. Next, we describes how the experimental design, procedure and manipulations fulfilled these criteria. This is followed by the data collection details and explanation on measuring transition performance.

5.2.1 Capturing Transition during Outsourcing in the Laboratory

Several aspects related to the conditions that exist *before*, *during* and *after transfer* of outsourced activities from client to vendor organization must be captured in the experiment design.

Two key aspects related to *before transfer* situation are – efficient and stable performance and the existence of shared understanding.

Efficient and Stable Performance: Client firms, before signing an outsourcing contract and transferring activities, are already operating with a certain stability and efficiency in their performance (Sparrow, 2003). Several years of accumulated experience in repeatedly and routinely performing theses activities contribute to their performance.

Existence of Shared Understanding: Client personnel have worked for a significant duration on the task with their colleagues and therefore, depict a shared understanding in the form of a "way of working" or organizational culture unique to their environment.

Two key aspects related to the *during transfer* situation are – a dedicated transfer period and no prior history of interaction between the client and vendor personnel involved in the transfer:

Transfer Period: Within an outsourcing scenario, there is a dedicated transfer phase – knowledge transfer (Carmel and Beulen, 2005) – in which client personnel transfer knowledge, experiences and routines related to outsourced activities to vendor personnel. The duration of this transfer period can vary between a few weeks to a few years depending on the outsourcing context.

No Prior History of Interaction: In most outsourcing scenarios, client personnel, transferring knowledge, experiences and routines, do not have a prior history of interaction with the vendor personnel (Cullen and Willcocks, 2003). This lack of historical interaction between personnel influences the effectiveness of the transfer.

Two key aspects related to the *after transfer* situation are – the replacement of some client personnel and integration of activities performed by the vendor:

Replacement of Client Personnel: In an outsourcing scenario, after the transfer period is over, some client personnel are retained while several client personnel, whose roles and responsibilities have been transferred, are replaced by vendor personnel (Cullen and Willcocks, 2003).

Integration of Vendor Performed Activities: The retained personnel work closely with the vendor personnel to integrate output of outsourced activities into the client firm and gain performance efficiency (Carmel and Tjia, 2005).

5.2.2 Capturing Organizational Task in Laboratory

As mentioned earlier, the experimental task needs to capture key elements of a real-world organizational task. We use four key elements generally characterizing an organizational task[13] (Weick, 1965; Zelditch and Hopkins, 1961) – information processing, interdependence, tacit component, and learning curve.

Information Processing: An organizational task requires some level of information processing by personnel performing it (Galbraith, 1974).

Interdependence: An organizational task involves some form of interdependence among tasks, personnel or technology for accomplishing a common goal or objective (Cheng, 1983).

Tacit Component: Repeating an organizational task over an extended period allows personnel working on it to develop a tacit understanding and to use prior experiences for completing the task efficiently. Codification and transfer of this tacit understanding poses severe challenges (Zollo and Winter, 2002).

Learning Curve: When an organization repeats a task over a period of time, a learning curve emerges producing an improvement in performance and efficiency in completing the task (Argote and Epple, 1990).

Along with capturing the key elements of an organizational task, the selected task needs to satisfy certain feasibility criteria (i.e. constraints) for reproducing the outsourcing scenario in the laboratory. Three criteria are relevant - moderate task complexity, task completion time and each instance of task being similar in characteristics yet distinct in actual application.

Moderate Task Complexity: The task selected needs to be neither too high nor too low in complexity. This is important in order for the transfer mechanism to have a possibility of influencing transition performance. If the task has high complexity, then knowledge, experiences and routines related to the

[13] This organizational task could also represent an IS task, for instance, IS development and maintenance activities. These four general elements can be interpreted and depicted in the context of an IS task.

task will be extremely difficult to transfer due to a higher tacit component and the limited time available during the transfer period. If the task has low complexity, then the transfer mechanism might lose its importance as the task could be performed efficiently without significant input from an experienced subject.

Task Completion Time: The selected task should not take more than a few minutes for completion. This is because to produce a learning curve demonstrating an improvement and stability in performance, the task must be performed several times during the experiment session. In order to develop this learning curve within a limited time period (to avoid severe fatigue for the participants), the task should have a short completion time.

Similar yet Distinct Instance of Task: To achieve a learning curve, the task should be performed several times over a certain time period. However, if exactly the same task is performed twice, it could lead to an extremely fast learning curve, which does not represent the general scenario concerning an organizational task. Therefore, the task chosen must have similar characteristics, such as complexity, but each specific instance of that task needs to be different. For example, consider the real-life organizational task of a secretary, the complexity level of his task remains generally the same each day, but each day presents a different instance of the secretarial work.

5.2.3 Experimental Task

After reviewing several tasks used in the organizational experiment literature, we chose to adapt the picture task to an outsourcing scenario. The picture task was originally used by Weber and Camerer (2003) to experimentally study the effect of organizational culture on mergers. A key element of this experimental task is that performing the task generates shared, idiosyncratic knowledge and understanding, between the two subjects, which parallels the shared understanding and tacit component that are necessary elements of organizational tasks selected for outsourcing (a more detailed analysis of the suitability of this task will follow after the experimental procedure has been described).

In our experiments, two subjects jointly work to identify 6 pictures[14] out of a set of 18 pictures depicting a lecture-room environment (see Figure 5.1 for examples). Although each picture shares many common elements, such as lecturer, students, and room characteristics etc., each picture is *unique*. Several attributes in each picture vary such as student composition (class size, gender, and age), lecturer's outward appearance (gender, clothing, and mood), room furniture (tables, chairs, and projectors) and specific acts of people (raising hand, holding a book). Black and white versions of the pictures are used to control any colour based distinction among them.

In each round of the experiment session, a set of 6 pictures, in a specific order, is given by the experimenter to one subject – A – in the role of picture describer. Another subject – B – in the role of picture selector has a total set of 18 pictures displayed in front of him or her. Next, A describes the 6

[14] These pictures are not exactly the same pictures used by Weber and Camerer as they were inaccessible, but extremely similar pictures selected from the internet search were used.

pictures to B. Both subjects can not see each other's pictures or make visual gestures. Except these two constraints, they can communicate in any way. B has to select the same 6 pictures in the correct order for completing the task. Task completion can only occur when exact 6 pictures in correct order are selected. In case B selects any picture incorrectly, then the experimenter will inform the A-B pair of the mistake only after B has made the selection of 6 pictures; for instance, the experimenter may notify the pair that picture 2 is wrong. Then, A needs to re-describe and B needs to re-select. The time taken for completion is noted for each round along with errors committed (number of wrong pictures selected).

5.2.4 Experimental Procedure and Manipulations

One experiment session was divided into three parts and took an average of 2 hours and 15 minutes to be completed[15]. On arrival, each subject, irrespective of the conditions, received an instruction sheet that provided information about their role (i.e. either picture selector or picture describer), a high level description of the picture task (as in above paragraph) and rules to be followed during the experiment session. They were then seated in their respective seats based on their role. In the first part[16], subject pair A-B repeated the task for 20 rounds. During the first few rounds, subject A tended to use long, detailed descriptions for each picture and subject B asked several clarifying and confirming questions to identify a picture (the average time taken by an A-B pair in the 1st round is 212 seconds).

[15] 16 pilot sessions were conducted to gauge the picture scenarios, complexity and number of pictures, manipulations and experiment procedure.

[16] As the study focuses on the influence of transfer mechanisms on transition performance, A-B and A-C's performance needed to be compared. Before the first part of the experiment, a trial session to familiarize subject A with the picture description role was conducted. This was done to limit the confounding effect of A's learning on transition performance. This trial session involved 10 rounds with A as picture describer and the experimenter as picture selector. Completely different pictures than the ones for the actual experiment sessions between AB and AC were used.

Pictures	Keywords
	Beamer from the ceiling Hands and Book Teacher sitting Stepped classroom Backpack
	Two teachers Girl with a pony tail Girl in cute jacket Guy with cap raising his hand American poster Instructor with hands in pocket

Figure 5.1. Examples of Pictures Used

For illustration, the following dialogue was recorded between a subject pair A-B for selecting a particular picture in the first round:

Subject A: *"A classroom with two teachers, white board on the left, window with black curtains, girl in the front with pony tail hair and sweatshirt"*
Subject B: *"Is there a laptop in front of her?"*
Subject A: *"No, no laptops, no computers. It is just sheets of paper."*
Subject B: *"Are the teachers male?"*
Subject A: *"Yes, there is some device in the middle, not a TV something else."*
Subject B: *"Both teachers are male, right?"*
Subject A: *"Yes, two posters behind them"*
Subject B: *"Okay, next"*

In the later rounds, this picture was referred as "two teachers". Based on the initial long descriptions and certain aspects of a picture that both subjects agreed to, a shared understanding between them emerged and as rounds progressed, past experience and learning led to much shorter descriptions and fewer questions, with completion time decreasing dramatically (the average time taken by an A-B pair in the 15th round is 24 seconds). During the last few rounds, subjects almost invariably used a single word description to select the correct picture.

These descriptions or "keywords" were idiosyncratic to a subject pair and varied greatly between subject pairs (see Figure 5.1). For instance, while one subject pair referred to a specific picture as "two teachers" based on the interaction between them in previous rounds, other subject pairs referred to the same picture as "girl with a pony tail", "girl in cute jacket", "guy with cap raising his hand", "American poster", and "Instructor with hands in pocket" (see Figure 5.1, second picture). In addition, subject pairs also developed specific task routines, for instance, one subject pair, preferred to start descriptions with – gender of instructor, density and gender of students in the room, type of projector used – overhead or PowerPoint etc., while another subject pair, preferred to start the description with the most striking feature in the picture and yet another subject pair focused on describing what appears in the bottom-left corner of a picture. The shared knowledge, experience and understanding about the pictures and the distinguishing routines created by a subject pair were idiosyncratic, which helped them to gain performance efficiency and to develop a learning curve. For illustration, consider that the A-B subject pairs substantially improved over 15 rounds; with a 1st round average performance time of 212 seconds to a 15th round time of 24 seconds. Similar observations were made for A-C subject pairs (see Figure 5.2 depicting average completion times for A-B and A-C subject pairs).

The second part of the experiment involved manipulations of transfer mechanisms. In this part, both A and B were notified that B's role (picture selection) has been outsourced and will be performed by another subject – C. This is followed by a transfer period in which B is randomly assigned one of the three mechanisms – a manual, training, observation – or a control condition called baseline[17]. Subject B then attempted to transfer task-related knowledge, experiences and routines to C[18].

For the *manual*, B wrote a document covering all the guidelines and tips that he or she would like to inform C about. The maximum time available for writing this document was 10 minutes, but no subject utilized the entire period. Most subjects wrote the manual within 5-10 minutes. After writing this document B left the laboratory and no interaction took place between B and C. This manual was made available to C before starting and during the entire third part of the experiment session.

[17] In baseline condition, no transfer or interaction took place between B and C.

[18] B and C were offered an extra incentive for making the transfer productive. If B and C have a good transfer session, enough such that A-C pair's performance average beats the average of the A-B pair, B will have a chance of winning an additional 50 euros by lottery.

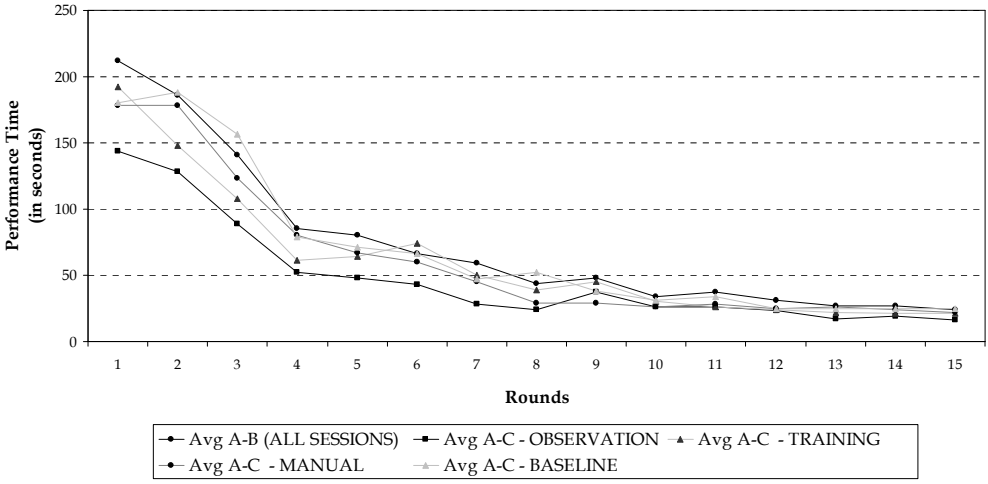


Figure 5.2 Average Performance Time for A-B sessions and A-C sessions per Round

For *training*, B and C were provided a conference room setup with a whiteboard to conduct a one-on-one training session. Both subjects were allowed to interact freely with each other about the task, share tips and clarify doubts. The maximum time available for the training period was 10 minutes. In all sessions, subjects were satisfied and completed the training in less than 10 minutes.

For *observation*, C entered the laboratory after the A-B pair completed the 15th round and was allowed to watch the last 5 rounds[19] - 16th to 20th – being performed. During these rounds, C was seated next to B and could closely observe B's role and the interactions between A-B pair. After each of these 5 rounds, a 60 seconds break was provided in which B could brief C and both were allowed to communicate freely. Subject A, however, was not allowed to interact with C.

In the third part, after gaining insights from the transfer session, C started performing the task with A and repeated the task for 15 rounds[20]. During these rounds, a different set of 18 pictures was used[21]. In first few rounds, the A-C pair struggled to develop concise descriptions due to new pictures and no past experiences, but as the rounds progressed, the A-C pair developed shared knowledge and gained performance efficiency. Table 5.1, Table 5.2 and Table 5.3 present an outline of how the experiment procedure and picture task captured key elements of the outsourcing scenario, the organizational task and satisfied the feasibility criteria, respectively.

[19] For both the *manual* and *training*, transfer took place after 20 rounds, while for *observation* transfer started from 15th round, continued for 5 rounds and ended after the 20th round. By the 15th round, A-B performance had improved tremendously and B was in a position to transfer tips to C. The average performance (A-B pair) in the 15th round of *observation* was – 20 seconds and in 20th round was – 16 seconds.

[20] While A-B repeated the task for 20 rounds, A-C repeated it only for 15 rounds due to two reasons. First, in order to keep each transfer condition same, A-B performed 15 rounds, irrespective of any condition, and 5 additional rounds to accommodate for *observation*. Introducing *observation* for 5 rounds after the 10th round seemed inappropriate, as A-B would not have achieved performance efficiency and after 20th seemed inappropriate, as it would increase the duration of the experiment session, which was already over 2 hours 15 minutes. Second, we expected A-C to take lesser rounds to reach similar performance levels due to the transfer received by C. It is important to note that all the analysis is based only on 15 rounds of A-B and A-C sessions.

[21] In total, a set with 36 pictures was created – 18 were used for A-B pair and another 18 for A-C pair. After using a particular set with 18 pictures for each mechanism and control condition, pictures were randomly assigned to produce a new set with 18 pictures.

Table 5.1 Analogy with Outsourcing Scenario

Key elements in real-world	Reproduced in the experiment procedure
Efficient and Stable Performance (before transfer)	In the experiment, the A-B pair represents a two person "client firm" that repeated a task for 20 rounds (to simulate several years of existence) reaching a stable and efficient performance towards the end. Average performance, for an A-B pair, in the 1st round is 212 seconds and in the 15th round is 24 seconds.
Existence of Shared Understanding (before transfer)	In the experiment, each client firm (A-B pair) developed path-dependent, idiosyncratic "keywords" for pictures, which helped them become efficient. For the same pictures, these keywords – understood within each A-B combination – differed among pairs, for instance, the picture called "Teacher in suit" by one pair was called "Long blackboard" and "Curtains on the left" by other pairs.
Transfer Period (during transfer)	In the experiment, there is a transfer period lasting around 10 minutes during which subject C (representing vendor personnel) received tips, suggestions and guidance about performing the task from subject B (client personnel).
No Prior History of Interaction (during transfer)	In the experiment, this aspect is modelled as client personnel (subject B) and vendor personnel (subject C) first met each other during the transfer period and were not aware of each other's background.
Replacement of Client Personnel (after transfer)	In the experiment, after the transfer period, one of the client personnel and his role (subject B) is replaced by the vendor personnel (subject C), while the other client personnel (subject A) retained his role.
Integration of Vendor Performed Activities (after transfer)	In the experiments, the client firm (A-B pair) outsourced a part of their activities (i.e. B's role of picture selection) to vendor personnel (represented by subject C). Then vendor personnel (subject C) took over the outsourced activities and started performing it along with the retained client personnel (subject A). Several rounds were needed for this new configuration of client and vendor (A-C pair) to achieve efficiency and stability in their performance

Table 5.2 Analogy with Organizational Task

Key elements in real-world	Reproduced with the picture task
Information Processing	Subject A received input in the form of 6 pictures from the experimenter, processed the attributes in the pictures and as output provided descriptions to subject B. While subject B, received these descriptions as input, processed them to search for the correct pictures and as output selected the set of correct pictures. The information processing requirement, though not extremely high, was reasonable due to the large number of pictures involved and high similarity between pictures.
Interdependence	The picture task involved high interdependence between subjects working in a pair to complete the task successfully. Without accurate and quick descriptions provided by the picture describer (subject A) with doubts raised and swift action taken by picture selector (subject B or C), subjects could not efficiently converge to the correct set of pictures required for task comletion.
Tacit Component	In the picture task, repeating the task over a time period provided each subject pair with an intimate understanding of pictures and unique keywords, shared only between them. The challenges in codification of this tacit component made transfer to a new subject

	difficult to achieve. One subject C mentioned during discussion and de-briefing sessions after the experiment that "it [picture task] is something that you have to experience to really understand and it is not possible to transfer it easily." Several participants echoed similar sentiments about the task.
Learning Curve	With the picture task, learning curves were produced. Subject pairs A-B or A-C learn to perform the task efficiently with each repetition, saturating at certain level towards the end. Average performance, for an A-B pair, in the 1st round is 212 seconds, 5th round is 82 seconds, 10th round is 34 seconds, 15th round is 24 seconds and 20th round is 19 seconds.

Table 5.3 Satisfying Feasibility Criteria

Feasibility criteria	Satisfied with the picture task
Moderate Task Complexity	The picture task presented reasonable complexity without being too low or too high. During 16 pilot experiment sessions, we checked and manipulated complexity by changing the total number of pictures in a set, number of pictures provided in each round, similarity between pictures and using different scenarios etc. Finally, 18 pictures were used with high similarity between them and 6 pictures were given to subjects in each round. Task complexity, using a modified scale in accordance with Murthy et al. (2008), was rated 4.3 (alpha = 0.76) on a 7 point scale (1=extremely low and 7=extremely high).
Task Completion Time	In a single experiment session, the task was to be performed 35 times in total and this represented a constraint for task selection. The picture task was suitable as the average completion time for the first round was 3 minutes and 32 seconds (A-B pair). The entire experiment session, including 35 rounds of task, transfer period and questionnaire completion etc., took an average of 2 hours.
Similar Yet Distinct Instance of Task	With the picture task, each instance of the task (i.e. in each round) was similar yet represented a different and randomized set of pictures for description and selection by subjects.

5.2.5 Participants and Data Collection

A total of 144 subjects, all university-level students, participated in the study. They were recruited through the university's research participation pool[22] and research flyers. Four sessions (2 from observation, 1 from manual and 1 from training) were not included in the analysis due to exceptional conditions such as extremely uncooperative behaviour between subjects, an unusually low interaction between subjects, a highly stressed subject and a subject arriving quite late to participate without reading the instructions properly. The final sample of 132 participants had 56 women (42.4%) and 76 men (57.6%) and was on average 22.3 years old. Only university students were used for the experiments and their fluency in English was gauged during participant selection. Participants were randomly assigned to 48 sets of three subjects. No subgroup differences were found for gender and nationality. Subjects from the participation pool were given 2 course credits, whereas other subjects

[22] This is a dedicated group of students, mostly bachelor students studying management, who make themselves available for participation in laboratory research.

were paid in cash at the end of the experiment session. Extra incentives[23] were available to carry out successful transfer (from Subject B to Subject C) and make accurate predictions regarding A-C performance.

For each condition, including the baseline (control condition), 12 sessions were conducted. The time taken for completion and errors committed in each round by A-B and A-C pairs were recorded. Subjects had to complete several questionnaires at different points in the experiment session related to self-efficacy, task complexity, comfort, familiarity, understanding, stress level and enjoyment with the task, and interaction between subjects. We also inquired about the expectations[24] of A and B regarding A-C's performance after the transfer period. In addition to these questionnaires, detailed experimental notes related to a subject's behaviour, interaction between subjects, the transfer period, and any other unusual aspect were taken rigorously following an experiment report protocol. Finally, out of 48, 14 experiment sessions (4 – observation, 6 – training, 2 – manual and 2 – baseline) were fully video-recorded. For an additional 7 experiment sessions (3 – observation and 4 – training) the entire transfer period was video-recorded. Furthermore, 5 sessions (1 – observation, 1 – training, 2 – manual and 1 – baseline) were fully audio-recorded. These data provided a rich overview of the learning process, shared understanding, knowledge development and subject behaviour during the entire session.

5.2.6 Measuring Transition Performance

As stated earlier, two dimensions depicting transition performance were measured – *transition duration* and *steady-state performance*:

Transition Duration: As the goal of transition is to commence the outsourcing relationship, the client and vendor organizations, based on their experience with the outsourced activities and their past relationships, agree on certain pre-defined performance levels to be achieved during transition. Reaching these performance levels determines the end of the transition period. In our experiments, we used the average performance of the A-B (client firm) in the last three rounds[25] 13^{th} – 15^{th} (25.7 seconds) as a benchmark for the A-C configuration (i.e. after outsourcing) to achieve, denoting the end of transition period, with one standard deviation (9.0 seconds) added to allow for some variation in performance across experimental sessions; thus, we obtained the final benchmark performance level of 34.7 seconds. Next, in each experiment session, for the A-B and A-C rounds, we looked at the moving average[26] of three rounds to find the round in which the performance time was closest to 34.7

[23] For Subject B, there was an additional incentive to better transfer his/her knowledge, experiences and routines by using one of the transfer mechanisms to Subject C. If the A-C pair performed better i.e. achieve shorter performance time than A-B pair, then both Subjects B and C had a chance of winning an additional 50 euros by lottery

[24] These expectations were solicited based on two questions, after 20 rounds of an A-B pair's performance,– time taken by an A-C pair in the 1st round and the fastest completion time (i.e. best time) of an A-C pair. Instructions regarding the transfer mechanism to be used by B were stated explicitly by the experimenter (i.e. whether observation, training, a manual or the control condition i.e. no transfer). The performance history of an A-B pair was also made available for making these estimations and no information about subject C's background was provided. Both A and B received an extra incentive for making accurate predictions. If estimate for the first question was within 10 seconds and within 5 seconds for the second question, then subjects had a chance of winning an additional 50 euros by lottery.

[25] The last 3 out of A-B's 15 rounds, represented 20% of rounds played, and seemed reasonable to depict benchmark performance level that should be achieved by A-C.

[26] The moving average of 3 rounds was used to counter any accidental fluctuation in performance by the subject pair.

seconds. This round number denoted the end of transition period. The total time taken (by A-B or A-C) from the 1st round to this round determined the *transition duration*. For illustration, two sessions – Exp 1 (Training) and Exp 21 (Baseline) are considered (see Figure 5.3). For Exp 1, we see that the performance in round 7th is 21 seconds, which is better than the benchmark performance (34.7 seconds). Although, there is a slight spike in performance in round 8th, but the moving average of rounds 7th-9th is 31.3 seconds, which is better than benchmark. Therefore, total seconds from rounds 1-6 is considered as transition duration and is equal to 656 seconds. For Exp 21, we see that performance in round 7th is 31 seconds, which is better than benchmark (34.7 seconds), and in round 10th the performance is 38 seconds, which is quite close to the benchmark. However, in both of these cases the performance is not yet stable (i.e. the moving average is not equal to or below the benchmark performance), hence they are not selected. Instead, round 13th with a performance time of 32 seconds is selected. Therefore, in this case, the total seconds from rounds 1-12, which is equal to 1278 seconds, determine the transition duration. For transfer mechanisms to have a positive influence, we expect this duration for A-C to be less than that of A-B.

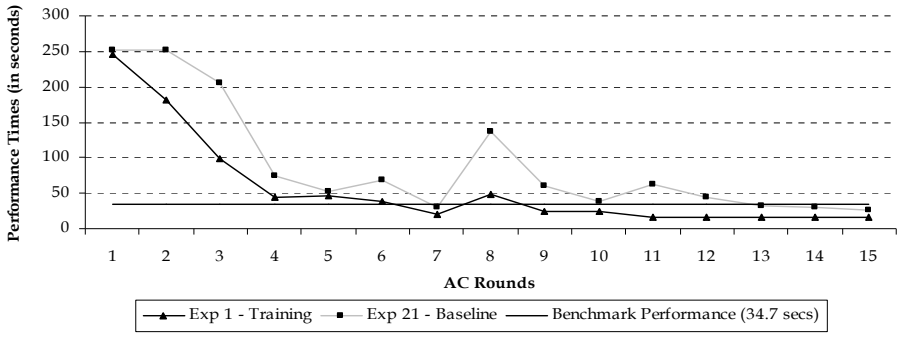


Figure 5.3 Illustration of Transition Duration

Steady-state Performance: Steady-state represents the period in which performance has converged to a final saturated level, after which no significant change in performance is visible. Along with the transition duration, it is also important to determine the eventual performance gains achieved due to outsourcing. After a saturation in performance is reached, the average performance time taken per round represented the *steady-state performance*. To determine saturation, we took the average of the last three rounds (13th-15th) as the basis. However, the performance across all A-C sessions varied to a large extent producing extreme standard deviation values that could not be used. To manage this, we opted for the average percentage value of standard deviation[27], which was 22% for the A-B sessions and 20% for the A-C sessions. Next, for each session, going backwards from round 15th, we looked at the moving average of three rounds to find the round in which the performance time was closest to

[27] Standard deviation for the last three rounds of each experimental session was divided by the average performance time in these rounds, to generate the percentage value of the standard deviation. This was done for all the A-B sessions or A-C sessions and then an average percentage value of standard deviation was derived.

the average performance of last three rounds (13th-15th) plus two times 22% or 20% (depending on whether it was an A-B or A-C session) of that average. The selected round denoted the round after which saturation was achieved. Then, the average performance time from the next round until the 15th round served as the steady-state performance. This performance is determined for both the A-B and A-C sessions. For illustration, one session – Exp 15 (Observation) is considered (see Figure 5.4). For the A-B rounds, we see that the average of the last three rounds is 39.3 seconds. We add two times 20% (i.e. 40%) to the average value of 39.3 seconds, which is then equal to 55 seconds. To determine the steady-state performance, moving backwards from round 15th, we see that performance in round 11th is equal to 76 seconds, which is much higher than the allowed limit of 55 seconds. The moving average of rounds 11th-13th is 52 seconds, while the moving average of the 10th-12th rounds is 56 seconds. Therefore, in this case, round 11th denotes the round after which saturation seems to be achieved. The average performance from round 12th to round 15th represents steady-state performance and is equal to 40 seconds. Similarly, for the A-C rounds, the average of the last three rounds is 18.3 seconds, adding two times 22%; we get a value of 26.3 seconds. Now, proceeding backwards from round 15th (round 31st in Figure 5.4), we see that the moving average of rounds 11th-13th is 24.3 seconds, while the moving average of rounds 12th-14th is 18.7 seconds, which is much closer to the 18.3 seconds value. Also, it is important to note that performance in round 11th (round 27th in Figure 5.4) is 34 seconds, which is much higher than the permissible level of 26.3 seconds. Therefore, in this case, round 11th denotes the round after which saturation seems to be achieved and its value is equal to the average performance from round 12th to round 15th, which is 19 seconds. In order to claim that transfer mechanisms have a positive influence on the steady-state performance, A-C's steady-state performance should be better (lower in seconds) than A-B's.

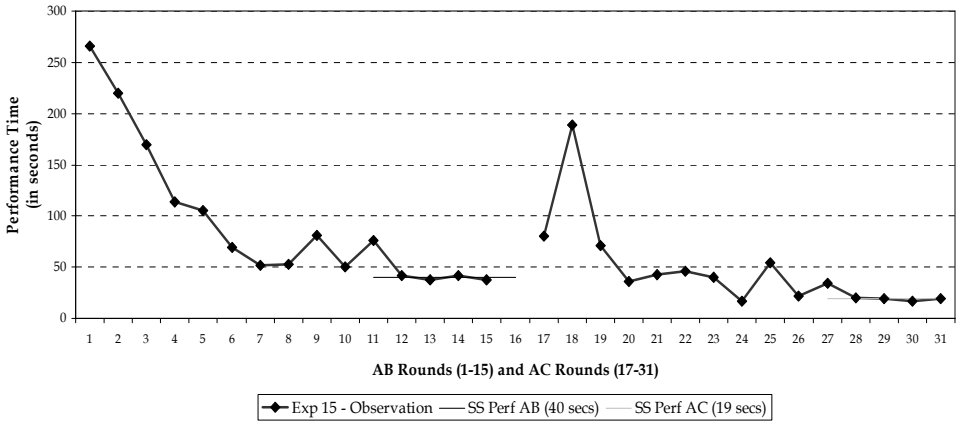


Figure 5.4 Illustration of Steady-state Performance

5.3 Results

Before determining the influence of transfer mechanisms, mean comparisons among the A-Bs' performance (using independent-sample T-test and Levene's test for equal variance) for both the transition duration and the steady-state performance among all four conditions was done to check whether any prior significant differences exist. No prior significant differences were found for any condition.

5.3.1 Comparing Transition Duration

The transition duration represents the total time taken to reach a pre-defined benchmark performance level of 34.7 seconds. Table 5.4 shows the mean and standard deviation values for the transition duration of both the A-B[28] and A-C sessions (also illustrated graphically in Figure 5.5).

Table 5.4 Mean[29] Transition Duration values for A-B and A-C sessions

Transfer Mechanisms	N	A-B Sessions (in seconds)		A-C Sessions (in seconds)		Mean Difference (A-B minus A-C)
		Mean	Std. dev	Mean	Std. dev	
Observation	10	999	230	539	95	460**
Training	11	1026	320	750	176	275*
Manual	11	1030	308	732	220	298*
Baseline	12	962	297	926	276	35

**p<0.001; *p<0.05

Next, we focus on hypothesis H1a, which states that all three mechanisms should positively influence transition duration (i.e. lead to a shorter transition duration for A-C as compared to A-B), while this should not be the case for the baseline (control condition). Using observation as the transfer mechanism, the A-C sessions were found to be on average 460 seconds faster (t_{18}=5.83, p<0.001, two-tailed) than the A-B sessions. With training as the transfer mechanism, the A-C sessions were found to be on average 275 seconds faster (t_{20}=2.50, p<0.05, two-tailed) than the A-B sessions. For the use of the manual as a transfer mechanism, the A-C sessions were found to be on average 298 seconds faster (t_{20}=2.61, p<0.05, two-tailed) than the A-B sessions. For the baseline or control condition, the A-C sessions were found to be on average 35 seconds faster than A-B but the difference was not significant. For all three transfer mechanisms, A-C sessions reached the pre-determined performance time (34.7 seconds) much earlier than their respective A-B sessions. Thus, hypothesis H1a was confirmed., hence, suggesting that each transfer mechanism assists in reaching the pre-defined performance level faster.

[28] Transition duration values for A-B sessions were determined similarly by using the benchmark performance of 34.7 seconds.
[29] All numbers are rounded off to the nearest second to improve readability.

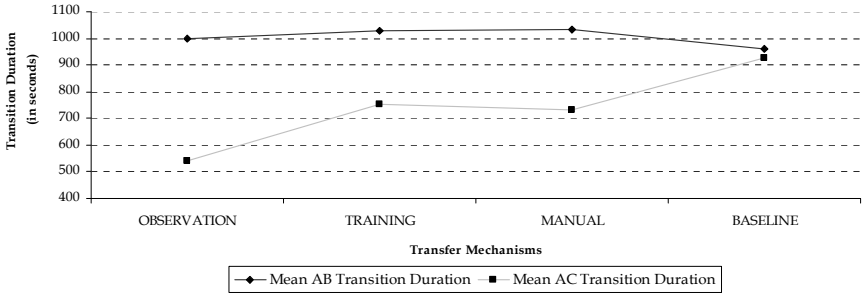


Figure 5.5 Mean Transition Duration values for A-B and A-C sessions

Next, the second set of hypotheses (H2a, H2b and H2c) predicts the relative influence of the transfer mechanisms in descending performance order, observation (best), training, a manual and baseline (least), ,on transition duration. Table 5.5 provides a comparison within the A-C sessions of each transfer mechanism and the baseline.

Table 5.5 Mean Difference in Transition Duration for each Transfer Mechanism pair

Differences within A-C sessions for Transition Duration (in seconds)				
	Observation	Training	Manual	Baseline
Observation	-	-211***	-193**	-387****
Training	-	-	18	-176*
Manual	-	-	-	-194*
Baseline	-	-	-	-

**** p<0.001; ***p<0.005; **p<0.05; *p<0.1

Observation was found to be on average 211 seconds (t19= -3.37, p<0.005, two-tailed) and 193 seconds (t_{19}= -2.56, p<0.05, two-tailed) faster than the training and manual respectively. The average difference of 18 seconds between training and a manual was not significant. In comparison to the baseline, observation was found to be on average 387 seconds (t_{18}= -4.21, p<0.001, two-tailed) faster. For training and a manual, the differences with baseline were found to be marginally significant at 176 seconds (t_{21}= -1.80, p<0.1, two-tailed) and 194 (t_{18}= -1.85, p<0.1, two-tailed), respectively. Thus, hypotheses H2a and H2c were confirmed suggesting that observation led to the best transition performance and manual performed better than the control condition. H2b, on the other hand, was rejected suggesting that no significant differences were found between the performance of training and a manual.

Furthermore, to assess the threat of common method bias, we conducted Lindell and Whitney's (2001) marker variable test (as suggested in Tiwana and Kyonsynski, 2009). This test involves using a theoretically unrelated variable (referred as marker variable) to determine correlations among the key variables or constructs. Since, the marker variable should be unrelated to any key constructs, therefore, a high correlation of the marker variable with any key construct would suggest a common method bias. For this test, we use two marker variables: "time of the day" (i.e. whether the experiment session was conducted in the morning or afternoon) and "day of the week" (i.e. on which weekday

was the experiment conducted). The correlation for "time of the day" and "day of the week" with AC transition duration (for the 44 experiment sessions) was -0.162 (N=44; t-value = 1.062; p<0.5) and 0.027 (N=44; t-value = 0.818; p<1) respectively. Since the correlation is low, we can conclude the absence of a common method bias.

5.3.2 Comparing Steady-state Performance

Steady-state performance represents the final saturated performance time achieved by a subject-pair. Table 5.6 shows the mean and standard deviation values for steady-state performance for both the A-B and A-C sessions (also illustrated graphically in Figure 5.6).

Table 5.6 Mean Steady-state Performance values for A-B and A-C sessions

Transfer Mechanisms	n	A-B Sessions (in seconds)		A-C Sessions (in seconds)		Mean Difference (A-B minus A-C)
		Mean	Std. dev	Mean	Std. dev	
Observation	10	22	7	16	4	6**
Training	11	30	15	22	6	8
Manual	11	25	8	24	7	1
Baseline	12	26	8	24	9	3

**p<0.05

Hypothesis H3a predicts that all three transfer mechanisms should positively influence steady-state performance, i.e. lead to a better steady-state performance for the A-C pairs as compared to the A-B pairs, while this should not be the case for baseline (control condition). For the observation transfer mechanism, the A-C sessions were found to be on average 6 seconds faster (t_{18}=2.2, p<0.05, two-tailed) than the A-B sessions. For both use of training and a manual, contrary to the hypothesis, A-C sessions were found to be faster, but the difference was not significant. For baseline, as expected, the difference between the A-C and A-B sessions was not significant. Thus, hypothesis H3a was rejected, suggesting that after outsourcing, only using observation as the transfer mechanism improved the steady-state performance time.

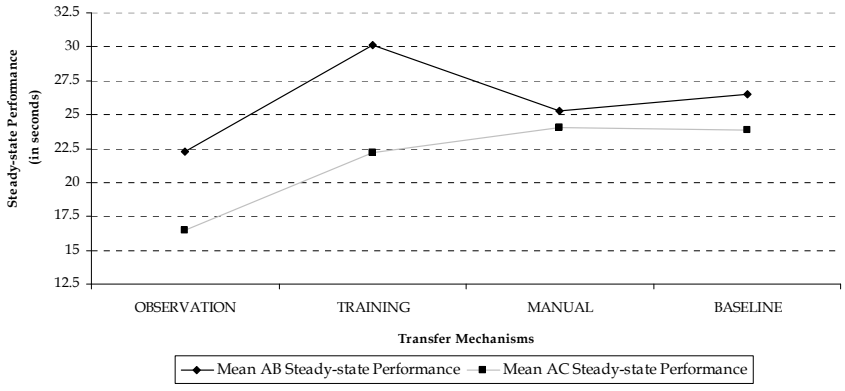


Figure 5.6 Mean Steady-state Performance values for A-B and A-C sessions

The fourth set of hypotheses (H4a, H4b and H4c) predicts the relative influence of transfer mechanisms in descending performance order, observation (best), training, manual and baseline (least), on steady-state performance. Table 5.7 provides a comparison within the A-C sessions of each transfer mechanism and the baseline.

Table 5.7 Mean Difference in Steady-state Performance for each Transfer Mechanism pair

Differences within A-C sessions for Steady-state Performance (in seconds)				
	Observation	Training	Manual	Baseline
Observation	-	-6**	-7***	-7**
Training	-	-	-2	-2
Manual	-	-	-	0
Baseline	-	-	-	-

***p<0.01; **p<0.05

For steady-state performance, observation was found to be on average 6 seconds (t_{19}= -2.67, p<0.05, two-tailed) and 7 seconds (t_{19}= -2.91, p<0.01, two-tailed) faster than training and use of a manual, respectively. Again, the difference between training and a manual was not significant. In comparison to the baseline, the observation was found to be on average 7 seconds (t_{20}= -2.40, p<0.05, two-tailed) faster. Thus, hypothesis H4a was confirmed while H4b and H4c were rejected, suggesting that among the transfer mechanisms only observation improves the final saturated performance.

5.4 Discussion

In this study, using a novel experimental design that captures several key elements of a real-world outsourcing scenario and organizational tasks in the laboratory, we examine the effectiveness of transfer mechanisms and their influence on transition performance. The results indicate that, as hypothesized, all three mechanisms influence transition performance by improving (or reducing) transition duration; and among the three mechanisms, observation has the strongest positive influence both on transition duration and steady-state performance. This substantiates the advantage of media-richness, social presence and contextualization (Short et al. 1976; Daft and Lengel 1986; Cordova and Lepper 1996) in utilizing observation or routine-based transfer mechanism. Based on the results of this study, we suggest that:

> **Proposition 3:** In an outsourcing setting, choosing the routine-based transfer mechanism (i.e. observation) as compared to directions-based transfer mechanism (i.e. training or job-manual), will lead to a shorter transition duration.

Furthermore, based on the experimental results, three insights deserve attention. First, during the experiments we found that although observation performs the best, it has a surprising drawback. We included a measurement for self-efficacy of C subjects *before* and *after* receiving transfer sessions using a modified Compeau and Higgins (1995) scale (cronbach alpha=0.70). Contrary to expectations, observation leads to a drop in the self-efficacy from 5.56 to 5.28 (using 7 point scale, 1= extremely low confidence and 7=extremely high confidence), while use of a manual produces a gain from 5.60 to 5.87. This difference between the *after* values of self-efficacy for observation and a manual is

marginally significant (t_{19}= -1.73, p<0.1, two-tailed). This suggests that observation produces a slight "shock" effect, which makes C subjects unsure about their performance. This is a reasonable conclusion as the C subject, in observation, watches the A and B subjects, who after 15 rounds are experts in performing their role, using obscure keywords to locate specific pictures from a set of 18 similar pictures in less than 20 seconds. Witnessing this process could create doubts and anxiety in the minds of the C subjects. Some subjects after observing the A-B pair explicitly stated that they were not so sure about their performance; however, no negative effects of this shock are visible on their performance.

Second, although manual performed poorly in the experiments, it reveals an interesting behaviour. Among the three mechanisms, for both the transition duration and steady-state performance, the manual sessions vary the most, with a standard deviation of 220 seconds and 7 seconds, respectively (see Table 5.4 and 5.6). On closer inspection, when the scatter plot of all A-C sessions for the transition duration is drawn (see Figure 5.7, each experiment session is reflected in the figure with different symbols – dot, pyramid etc.), it shows that a manual not only has the highest variance among the three mechanisms, but also produced three widely distributed clusters. A cluster of 4 sessions performed extremely well, while another cluster of 4 sessions performed extremely poorly with the third in between. In comparison, both training and observation had reasonably close clusters. This unusual variation in the performance of a manual motivates further investigation on why the manual sessions vary so much?

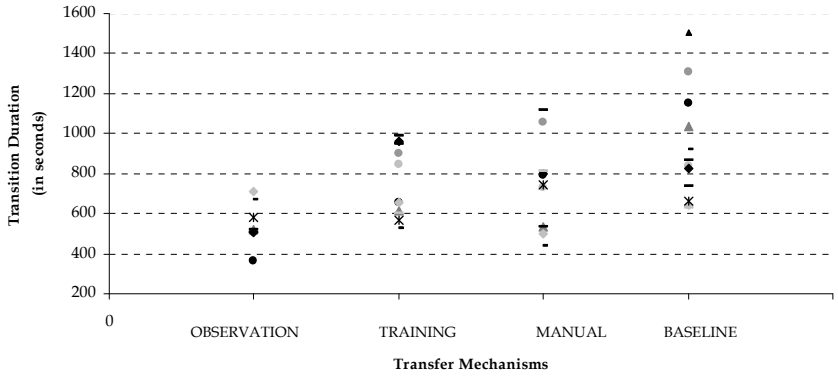


Figure 5.7 Transition Duration Values – All Experiment Sessions for Each Transfer Mechanism

Two explanations are possible for this large variation: 1) due to the A or C subject's personal characteristics and 2) due to a variation in the quality of the manual documents. The performance after transfer is dependent on personal characteristics, such as, the preferred learning style of the subjects (Davis and Davis, 1990); for instance, the subjects in the first cluster could be inherently good learners or fond of manuals, whereas in the third cluster they could be poor learners or despise manuals. Since personal characteristics, beyond background information, are not captured in the experiment it is therefore difficult to investigate its influence on the variation. However, closer

inspection of the videos for the better and worst performing manual sessions did not reveal any surprising differences. The quality of the manual documents as the possible cause for the variation seems plausible and was investigated further. To determine the quality, we developed a manual grading scale comprised of four elements – strategy, context, comfort and structure. Strategy refers to the most critical insights (i.e. stating the importance of "keywords", their emergence as a shared process, and remembering the location of difficult pictures) and the overall objective (i.e. to perform the task quickly). Context refers to providing some information about the pictures (i.e. classroom scenario, possibly, with some examples) and about A-B's performance for a reference. Comfort refers to some motivation such as "good luck" or "best of luck" along with the details. Structure refers to the clarity of the document, in terms of instructions and their sequence. First, each element was given an equal weight and was judged on a 3 point scale (0=element not present; 1=element present but not good; and 2=element present and good). Two experimenters, who were present during all the experiment sessions, ranked the eleven manuals from 1st to 11th (with an inter-rater reliability of 62%). This ranking of the manual quality failed, however, to match with the observed performance (i.e. high ranking manuals were not found to the better performing ones).

The third insight derived form these experiments is related to the C subjects' ratings of the transfer sessions. At the end of each A-C session, C subjects were asked to rate the extent to which they found the transfer they had received useful (1= little extent; 7= great extent). They had to provide two ratings: *before*[30] - looking back at the transfer session and *after* – now that they had experienced the task. All subjects, gave a *before* rating higher than the *after* rating, for instance, one C subject gave a before rating for the training session she received as 5 but an after rating as 2. This meant that after performing the task, she rated the transfer session as not very useful, but right after transfer session, she thought that it was quite useful. When the subjects were asked about what they would prefer to add to the transfer session so that it could receive an *after* rating of 6 or 7, they could not come up with any new points rather just that "*…more emphasis should be given to the key points, they should be repeated and their importance should be made clear*". Several subjects responded with "*…he [B subject] gave me good training but it [task] is something that you have to experience and do to really understand*." This suggested that articulating and codifying task-related knowledge, experience and routines, to perform quickly, was quite challenging.

The results and insights from these experiments lead to two areas for further investigation. First, as a manual is entirely based on codification, for the cluster of sessions that performed well (see Figure 5.7) better codification might have led to higher performance. This advances a possible alternative explanation that for direction-based mechanisms, better codification of task-related knowledge, experience and routines instead of media-richness, social presence or contextualization, leads to improved performance. Second, as performance is closely dependent on the chosen task, these results

[30] It is important to note that we asked for a *before* rating not immediately after transfer was conducted but after the A-C session was over. This was done to solicit their opinion, about the usefulness of transfer, once they had gained significant experience with the task.

might not generalize to varying task characteristics, thereby motivating a study of the influence of task complexity on performance. To investigate these and to determine any moderating role of codification and task complexity on the relationship between transfer mechanism and transition performance, a follow-up study detailed in the next chapter was conducted.

6 TRANSFER MECHANISMS AND TRANSITION PERFORMANCE: MODERATING INFLUENCE OF CODIFICATION AND TASK COMPLEXITY

The previous study (Chapter 5) shows that transfer mechanisms influence transition performance by capturing and transferring knowledge, experiences and routines related to the task. It suggests that certain mechanisms, such as, observation allow for better transfer of tacit knowledge, experiences and routines due to media richness (Daft and Lengel, 1986), social presence (Short et al., 1976), and contextualization (Cordova and Lepper, 1996), which leads to improved performance (Nonaka, 1991; Argote et al., 2003; Nadler et al., 2003). In this chapter, based on the findings and insights from the first set of experiments, we focus on extending the study by examining the relationship between transfer mechanisms and transition performance under varying levels of codification and task complexity. Therefore, this study addresses the following research questions:

> **RQ 3a:** *Whether and why codification moderates the relationship between transfer mechanism and transition performance?*
>
> **RQ 3b:** *Whether and why task complexity moderates the relationship between transfer mechanism and transition performance?*

The focus on codification is motivated by two insights. First, in the previous experiments, we found that while the manual did poorly as a transfer mechanism, its performance greatly varied with distinct clusters. We could not explain what led to the formation of these clusters that reflected extremely good and bad performance. The differences in the extent of codification – the process of articulating and capturing tacit knowledge in a fixed, standardized and useable form (Zollo and Winter, 2002) – achieved in the manuals for these sessions could be an alternative explanation. Furthermore, while observation was found to be the best mechanism, the manual performed poorly. Again, a possible alternative explanation for why observation did well while the manual did poorly could be the extent of and the need for codification required in a particular transfer mechanism. Observation does not depend much on codification, while a manual is heavily dependent on codification and, therefore, the task-related knowledge and experiences were challenging to codify leading to the poor performance of the manual. This suggests that codification is emerging as an alternative explanation warranting further investigation.

Second, scholars, especially economists, have questioned the "fascination with the tacit component of knowledge" by suggesting that "organizations to a large extent are articulation machines" (Hedlund, 1994: 76). They suggest that too often tacit or implicit aspects of knowledge are used for explaining various phenomena, which in turn diverts academic attention from the "economically obvious significance of its converse, explicit or articulated knowledge" and the challenge of developing

innovative ways to codify the tacit component of knowledge (Hakason, 2007: 51). Furthermore, from a practice perspective, organizations involved in outsourcing are much more inclined to use manuals over observation because of the economic differences in implementing these mechanisms. While observation requires client and vendor personnel to be collocated for certain time periods, manuals, once developed, can be easily replicated and distributed. Therefore, research on better or improved codification practices presents an opportunity relevant to both academics and practitioners.

The focus on task complexity is chosen as task characteristics, specifically complexity, are an important determinant of the task performance. However, not all tasks encountered in outsourcing involve or require the development of a similar level of tacit knowledge and experience. Furthermore, this gains significance in practice because currently several types of tasks, ranging from, for instance, knowledge intensive R&D activities to simple helpdesk tasks, are outsourced. Therefore, from both theoretical and practical perspectives, we ask whether the findings from the previous study generalize across conditions of varying task complexity.

This chapter presents the study in two parts, Sections 6.1 through 6.3 address the theoretical background and hypotheses, followed by the modifications in experimental manipulations and results related to codification, while Sections 6.4 through 6.6 present the same for task complexity. Subsequently, we discuss their possible explanations and implications.

6.1 Theoretical Background and Hypotheses: Codification

In the current business scenario, we see a growing prevalence and significance of codification with increased reference to the knowledge-based economy, knowledge-based theory of the firm, and the introduction of knowledge management systems (Alavi and Leidner, 2001). Discussion on codification – the process of articulating and capturing tacit knowledge in a fixed, standardized and useable form (Zollo and Winter, 2002) – is mainly concerned with the distinction and debate linked to tacit and explicit knowledge (Cowan et al., 2000; Grant, 1996; Johnson et al., 2002) but at the same time, there is a lack of consensus about the conceptualization and definition of tacit knowledge (or just knowledge). Thus, scholars have called for greater attention to the role of codification (Cowan et al. 2000; Hakanson 2007).

The extent of codification that can be achieved with regard to any (tacit) knowledge also forms a critical component in this debate. While some suggest that certain aspect or degree of tacit knowledge can never be codified (Grant and Baden-Fuller, 1995), others believe that codification is a matter of economics (i.e. when investment costs outweigh benefits accrued, codification will occur). Furthermore, scholars have made an addition to the tacit-explicit knowledge dichotomy by proposing another dimension of knowledge, which is articulable and codifiable but has not been converted into explicit knowledge, referred as unarticulated knowledge (Cowan et al., 2000: 230), articulable tacit knowledge (Hakanson, 2007) or implicit knowledge (Leonardi and Bailey, 2008). Irrespective of the relative importance or precise definition of tacit and codified knowledge, it is unanimously agreed that codified knowledge – i.e. formally articulated and explicitly defined knowledge – is easier and

cheaper to store, transfer and reuse as compared to tacit knowledge (Boisot, 1983; Kogut and Zander, 1992; Zollo and Winter, 2002; Hakanson, 2007); thereby, generating significant interest for practitioners.

Within the IT function, codification is gaining popularity as organizations increase their focus on process documentation and standardization (with initiatives such as CMM and ITIL etc.) in terms of storing, transferring and reusing process-related knowledge (Grimaldi and Torrisi, 2001). Codification (in the form of documentation) gains significance in the context of knowledge transfer in general, and transition during outsourcing specifically, because of the economical benefit it generates by reducing "the need for media richness" and the "uncertainty involved" (Albino et al., 1999; Albino et al., 2001). As discussed earlier, while observation relies less on codified and more on tacit knowledge, directions-based transfer mechanisms, especially a manual, rely heavily on the availability of codified knowledge. Hence the extent of codification becomes extremely significant for performance.

This study focuses on determining whether better codification can lead to better capturing and transferring tacit knowledge, experiences and routines and potentially improve performance. To increase codification of knowledge, experience and routines during the writing of manuals, two related approaches are introduced – the usage of templates (Baden-Fuller and Winter, 2008) in the documentation process to increase standardization and the usage of interactive document reviews (Prencipe and Tell, 2001) to increase the correctness and comprehensiveness of the documentation. This new manual is referred as the 'modified manual', while the manual in the previous study (Chapter 5) is now referred as the 'normal manual'. Based on the above discussion, we expect the extent of codification achieved (with use of these codification improvement practices) to moderate the relationship between the directions-based transfer mechanism (a manual) and transition performance. Thus,

> *Hypothesis 6.1 (H6.1): Utilizing the modified manual will result in a shorter transition duration than using the normal manual (i.e. manual condition in Chapter 5).*
>
> *Hypothesis 6.2 (H6.2): Utilizing the modified manual will result in better steady-state performance than the normal manual (i.e. manual condition in Chapter 5).*

6.2 Method

The experimental setting and procedure used for this study was exactly the same as in the previous study (Chapter 5). But additional manipulations were developed for creating the 'modified manual'.

6.2.1 Introducing Codification Practices

In order to create the manual written using selected codification practices, referred as the 'modified manual' (as opposed to the 'normal manual' of the previous study), a template was designed based on the knowledge distinction typology suggested by Johnson et al. (2002) and our experience in observing the manual condition in the previous study (see Table 6.1). This included four sections (with a brief description): *purpose* – aimed at capturing the goal or objective of the task and the broader

context, *process of selecting pictures* – focused on capturing know-what, know-how and know-why (Johnson et al. 2002) of performing the task, *illustration* – provided some examples and *other* – used for any general comment. Furthermore, to include an interactive review, after subject B has written the manual, subject A reviews it and provides additional comments or modifications, which are incorporated in the manual document.

Table 6.1 Template for Modified Manual

1. Purpose:

Please describe the goal and the context of the picture task.

2. Process of selecting pictures:

Please explain what you were doing in the picture task and how?

Why do you think these steps helped you in completing the picture task?

3. Illustration:

Please provide some example(s) to illustrate your point(s) above.

4. Other (miscellaneous comments):

Any other general tips or hints for the person who is replacing you?

6.2.2 Participants and Data Collection

In April and May 2009, a total of 36 subjects, all university-level students, participated in this study. Again, 12 sessions were conducted for the condition of the 'modified manual' with the same picture sets as used in the previous study (Chapter 5). One session was not included in the analysis due to the subjects being extremely careless towards the experiment. The participants were randomly assigned to the sessions. Furthermore, similar data (time taken for completion, errors committed, questionnaires and experimental notes) were collected as in the previous study (Chapter 5).

6.3 Results

Before determining the moderating influence of codification, mean comparisons for both transition duration and steady-state performance among the A-B pairs in the modified manual setting were made with the other conditions – observation, manual and baseline of previous study (using independent-sample T-test and Levene's test for equal variance to determine which T-values to use). No prior significant differences were found for any condition.

6.3.1 Moderating Role of Codification

Table 6.2 represents the mean and standard deviation values for the transition duration of both the A-B and A-C sessions using the 'modified manual' along with the values for all the transfer mechanisms from the previous study (illustrated graphically in Figure 6.1).

Table 6.2 Mean Transition Duration values for A-B and A-C sessions (incl. Modified Manual)

Transfer Mechanisms	N	A-B Sessions (in seconds)		A-C Sessions (in seconds)		Mean Difference (A-B minus A-C)
		Mean	Std. dev	Mean	Std. dev	
Modified Manual	11	924	253	604	72	320**
Normal Manual	11	1030	308	732	220	298*
Observation	10	999	230	539	95	460***
Training	11	1026	320	750	176	275*
Baseline	12	962	297	926	276	35

***p<0.001; **p<0.005; *p<0.05

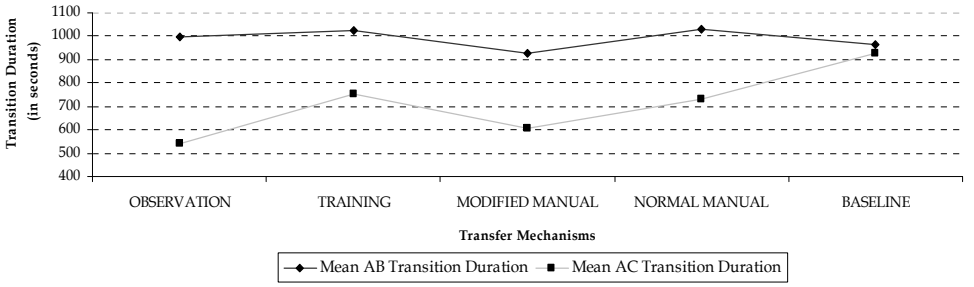


Figure 6.1 Mean Transition Duration values for A-B and A-C sessions (incl. Modified Manual)

Next, hypothesis 6.1 (H6.1) states that adopting codification improvement practices during documentation (i.e. modified manual) will lead to a shorter transition duration than not adopting them (i.e. normal manual). We find that, for the modified manual (n=11), the mean transition duration value for A-B sessions was 924 seconds (std. dev is 253) and for A-C sessions was 604 seconds (std. dev is 72). The mean difference between these showed the latter to be faster by 320 seconds (t_{20}= 4.03, p<0.005, two-tailed). Table 6.3 provides a comparison between the modified manual and observation, training and the normal manual (from previous study).

Table 6.3 Mean Difference in Transition Duration for Modified Manual with other Transfer Mechanisms

Differences within A-C sessions for Transition Duration (in seconds)				
	Observation	Training	Normal Manual	Baseline
Modified Manual	65*	-146**	-128*	-322***

***p<0.005; **p<0.05; *p<0.1

It is interesting to note that for the modified manual A-C sessions were on average 146 seconds (t_{20}=-2.55, p<0.1, two-tailed) and 322 seconds (t_{21}=-3.75, p<0.005, two-tailed) faster than training and baseline respectively. Also, for the modified manual A-C sessions were on average 65 seconds (t_{19}=1.78, p<0.1, two-tailed) slower than observation. Furthermore, in comparing the modified manual and the normal manual, we find that the mean difference was marginally significant with the former being 128 seconds faster than the latter (t_{20}= 1.84, p<0.1, two-tailed). Thus, H6.1 was confirmed

suggesting that, for a high complexity task, improved codification practices (i.e. using a modified manual) increases performance as compared to not using these practices (i.e. a normal manual).

Additionally, following Lindell and Whitney (2001), to assess the threat of common method bias, we again used a similar approach (as in Chapter 5) of determining the correlation of two marker variables: "time of the day" and "day of the week" with AC transition duration (for all 55 sessions i.e. including sessions with modified manual). This correlation value was found to be -0.126 (N=55; t-value=0.929; $p<0.5$) and 0.049 (N=55; t-value=0.82; $p<1$) respectively. Since this value is low, we can conclude the absence of a common method bias.

Table 6.4 Mean Steady-state Performance values for A-B and A-C sessions (incl. Modified Manual)

Transfer Mechanisms	**N**	**A-B Sessions (in seconds)**		**A-C Sessions (in seconds)**		**Mean Difference (A-B minus A-C)**
		Mean	Std. dev	Mean	Std. dev	
Modified Manual	11	32	8	25	6	7
Normal Manual	11	25	8	24	7	1
Observation	10	22	7	16	4	6**
Training	11	30	15	22	6	8
Baseline	12	26	8	24	9	3

**p<0.05

Table 6.5 Mean Difference in Steady-state Performance between Modified Manual and others

Differences within A-C sessions for Transition Duration (in seconds)				
	Observation	Training	Normal Manual	Baseline
Modified Manual	9***	3	2	1

***p<0.01

Hypothesis 6.2 (H6.2) states that adopting codification improvement practices during documentation (i.e. the modified manual) will lead to better steady-state performance duration than not adopting them (i.e. the normal manual). We did not find any significance for steady-state performance values between the modified manual and the normal manual (see Table 6.4 and 6.5). Thus, H6.2 was rejected.

6.4 Theoretical Background and Hypotheses: Task Complexity

Task complexity is one of the fundamental constructs in organization science (Thompson, 1967), specifically in the areas of information-processing and decision making (Payne, 1976; Wood, 1986; Campbell, 1988). In a review of the construct, Wood (1986: 64-65) suggests that any task can be conceptualized as a combination of a desired output (e.g. a functional software code), behavioural responses or acts needed to generate this output independent of task-doer (e.g. writing and testing the software code) and information cues that assist judgements related to the task performance (e.g. logical flow and use of advance programming concepts). According to Wood (1986: 66), task complexity for a given output level, is an interaction of acts and information cues, which "set upper limits on the knowledge, skills, and resources individuals need for successful task performance". Based on this, three types of task complexity are defined: component, coordinative and dynamic complexity. Component complexity represents a combination of the number of distinct acts to be

executed and information cues to be processed in performing the task. As this number increases, the knowledge, experience and skills needed to perform the task also increase due to a greater information processing requirement. Coordinative complexity represents the nature of relationships such as form, strength and frequency among output, acts and information cues. It includes the interdependence of acts or information cues (e.g. writing the software code using different logic by going back and forth between writing and testing of the code). Dynamic complexity refers to the influence of environmental or other changes on the relationship between output, acts and information cues, which further impacts the knowledge, skill and resource requirements to perform the task.

In another excellent review of the construct, Campbell (1988: 40) suggests that task complexity be conceptualized in three forms: (a) primarily a psychological experience, (b) an interaction between the task and the task-doer's characteristics, and (c) a function of objective task characteristics. First, although "no studies were found that treated task complexity *exclusively* as a subjective, psychological experience of the task-doer" (1988: 41, italics in original), several studies in the area of job and task design do emphasize the subjective, psychological reactions experienced by the task-doer, such as, feelings related to autonomy, variety, feedback, identity and challenge over objective task characteristics to conceptualize task complexity (Ganster, 1980; Taylor, 1981). Second, compared to a primarily psychological experience, an interaction between the task-doer and the task characteristics has been widely utilized as a determinant of complexity suggesting that tasks are more or less complex depending on the capabilities of the task-doer (March and Simon, 1958). Third, some studies conceptualize task complexity only in terms of objective task characteristics. For instance, Payne (1976) suggested complexity as a function of the number of alternatives available to the task-doer and the number of attributes on which these alternatives need to be compared. Along similar lines, Schroder et al. (1967) defined task complexity by information overload (the number of dimensions of information requiring attention), information diversity (the number of alternatives associated with each dimension) and the rate of information change (representing degree of uncertainty involved). Extending this characterization, Campbell (1988: 43) proposed objective task complexity to be determined by four basic features of the task: (a) multiple potential ways (i.e., paths) to reach a desired end-state (b) multiple desired outcomes (i.e., end-states) to be achieved, (c) conflicting interdependence among paths to multiple outcomes, and (d) uncertain or probabilistic links among paths and outcomes.

Prior research studying the influence of task complexity on task performance suggests that varying complexity creates varying information processing requirements (Payne, 1976; Tushman and Nadler, 1978) or knowledge, experience, skill and effort requirements (Wood, 1986). These requirements determine the cognitive load on the individual performing the task, hence, making the individual's expertise or capabilities in managing this cognitive load (March and Simon, 1958; Schroder et al., 1967; Campbell and Gingrich, 1986; Klemz and Gruca, 2003; Haerem and Rau, 2007) an important determinant of performance.

In this study, we focus on the influence of task complexity on the relationship between the transfer mechanism and transition performance. Complex tasks increase the cognitive load demanding higher competence, expertise or capabilities, which are developed with path-dependent accumulated knowledge, learning and experience (Cohen and Levinthal, 1990; Cohen and Bacdayan, 1994; Sandberg, 2000; Zwollo and Winter, 2002; Argote et al., 2003). Therefore, outsourcing tasks with high complexity will be more challenging, as compared to low complexity tasks, as it will involve the transfer of greater idiosyncratic knowledge, experience and routines – both tacit and explicit (Mark and Anderson, 1989; Simonin, 1999). The previous study (Chapter 5) suggests that a routine-based transfer mechanism (i.e. observation) provides higher richness and contextualization and reduces the dependence on codification in comparison to a direction-based transfer mechanism (i.e. a manual); therefore, adopting the former for a complex task is expected to lead to better performance. In contrast, utilizing a direction-based transfer mechanism for a complex task will further increase the challenge of codifying and transferring the knowledge, experience and routines, thereby, leading to poor performance. We expect task complexity to moderate the relationship between transfer mechanism and transition performance, specifically, we expect that for high task complexity the differences in transition performance between routine-based and direction-based transfer mechanisms will be higher than that for the low task complexity. In other words, as task complexity reduces, the differences produced by the influences of transfer mechanisms will reduce. Thus, for the transition duration:

Hypothesis 6.3a (H6.3a): The difference in transition duration between using observation and the normal manual will be greater for high task complexity than for low task complexity.

Hypothesis 6.3b (H6.3b): The difference in transition duration between using observation and the modified manual will be greater for high task complexity than for low task complexity.

Similarly, for steady-state performance:

Hypothesis 6.4a (H6.4a): The difference in steady-state performance between using observation and the normal manual will be greater for high task complexity than for low task complexity.

Hypothesis 6.4b (H6.4b): The difference in steady-state performance between using observation and the modified manual will be greater for high task complexity than for low task complexity.

6.5 Method

The experimental setting and procedure used for this study was exactly the same as in the previous study (Chapter 5). But additional manipulations were developed for creating a low task complexity setting.

6.5.1 Varying Task Complexity

In order to manipulate task complexity, we reduced the number of alternatives available for successful task performance, thereby, reducing the information processing or cognitive load on the

subjects (Schroder et al., 1967; Campbell, 1988). This was implemented with two modifications[31]. First, we reduced the total number of pictures available to subjects B and C, from 18 (in the previous study) to 14 in this study. Second, within these 14 pictures[32], we introduced two different scenarios with 7 pictures each – empty board rooms (without any people) and team discussion sessions (with people), instead of one scenario as in the previous study – lecture room (with lots of students, furniture and instructor). Within each scenario, the pictures had similar features, for instance, all empty board room scenario pictures were set in a conference room with a meeting table, chairs, lighting and paintings on the wall etc. But each picture was unique. The presence of two scenarios further reduced the number of alternatives available to the subjects, when selecting a picture. These modifications created a *low* task complexity condition as compared to a *high* task complexity situation in the previous study. To measure the influence of these modifications, perceived task complexity was solicited (a five item scale based on Murthy et al., 2008) from the subjects. The mean value in the previous study (Chapter 5) is 4.28 and in the current study it is 3.79. These differences are significant ($p<0.001$) suggesting that the previous version of the task had a higher complexity than the current version.

6.5.2 Participants and Data Collection

From April to July 2009, a total of 144 subjects, all university-level students, participated in this study. Again, 12 sessions were conducted for each of the four conditions in the low complexity setting – observation, the normal manual, the modified manual and baseline. Therefore, a total of 48 sessions were conducted in this study. One session was not included in the analysis due to the subjects having poor fluency in English. The participants were randomly assigned to the sessions. Furthermore, similar data (time taken for completion, errors committed, questionnaires and experimental notes) were collected as in the previous study (Chapter 5).

6.6 Results

Before determining the moderating influence of task complexity, mean comparisons, for the four low-complexity conditions, were done for both the transition duration and steady-state performance among the A-B pairs (using independent-sample T-test and Levene's test for equal variance to determine which T-values to use). No prior significant differences were found for any condition.

6.6.1 Moderating Role of Task Complexity

Hypothesis H6.3 (H6.3a and H6.3b) states that the difference in the A-C transition duration, for a high complexity task as compared to a low complexity task, will be greater between observation and the normal manual. This is also suggested to be the case between observation and the modified manual. To determine this, first we need to closely examine the results of the low complexity condition and then compare these with the high complexity results from the previous study.

[31] 10 Pilot sessions were conducted with a different number of pictures and different scenarios to calibrate the complexity level.
[32] Two different sets of 14 pictures each were used for the A-B and A-C sessions. Furthermore, these pictures were different from the sets of 18 pictures in the previous study to avoid any confounding effect on task complexity.

As the transition duration represents the total time taken to reach a pre-defined benchmark performance level, an approach similar to the previous study was used to determine the low complexity benchmark. For low complexity conditions, the benchmark was calculated as the average of last three rounds (13^{th}-15^{th}) of all the A-B sessions (19 seconds) with one standard deviation (7 second seconds) added to allow for some variation in the performance (i.e. 26 seconds). Table 6.6 shows the mean and standard deviation values for the transition duration of both A-B and A-C sessions respectively for the low complexity task (also illustrated graphically in Figure 6.2).

Table 6.6 Mean Transition Duration values for A-B and A-C sessions – Low Complexity

Transfer Mechanisms	N	A-B Sessions (in seconds)		A-C Sessions (in seconds)		Mean Difference (A-B minus A-C)
		Mean	Std. dev	Mean	Std. dev	
Observation	12	552	293	334	226	218*
Modified Manual	11	446	155	342	113	104*
Normal Manual	12	515	213	384	127	131*
Baseline	12	469	127	467	238	2

*p<0.1

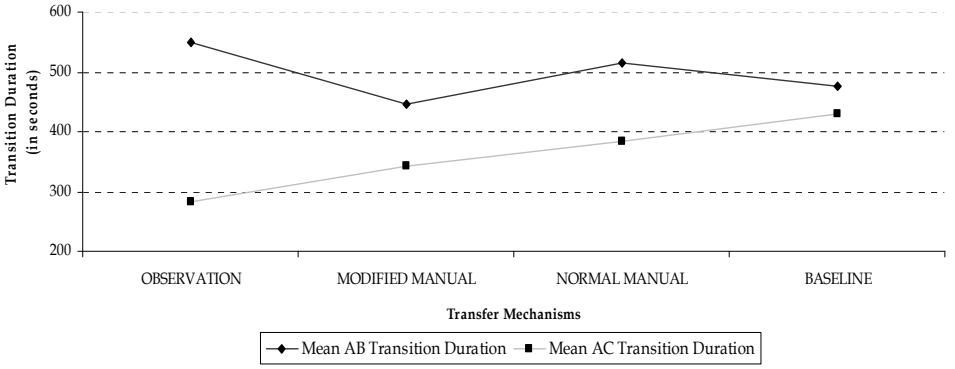


Figure 6.2 Mean Transition Duration values for A-B and A-C sessions – Low Complexity

For observation, A-C sessions were found to be on average 218 seconds faster (t_{22}=2.04, p<0.1, two-tailed) than A-B. For the modified manual, A-C sessions were found to be on average 104 seconds faster (t_{20}=1.80, p<0.1, two-tailed) than A-B. For the normal manual, A-C sessions were found to be on average 131 seconds faster (t_{22}=1.83, p<0.1, two-tailed) than A-B. In the baseline condition, A-C sessions were found to be on average 2 seconds faster than A-B, but the difference was not significant. This suggests that even for the task with relatively low complexity, utilizing a transfer mechanism reduces the time taken to reach a pre-determined performance level.

Table 6.7 Mean Difference in Transition Duration for each Transfer Mechanism pair – Low Complexity

Differences within A-C sessions for Transition Duration (in seconds)				
	Observation	Modified Manual	Normal Manual	Baseline
Observation	-	-8	-50	-133*
Modified Manual	-	-	-42	-125*
Normal Manual	-	-	-	-83
Baseline	-	-	-	-

*p<0.1

Table 6.7 provides the comparison between the A-C sessions for each transfer mechanism. It is interesting to note that the differences between observation and other conditions (excluding baseline), were not found to be significant. This suggests that for low complexity tasks, performance when utilizing observation does not differ from any other transfer mechanism. The difference between observation and the baseline of 133 seconds was marginally significant (t_{22}=-1.40, p<0.1, one-tailed). Also, the difference between the modified manual and baseline of 125 seconds was marginally significant (t_{21}=-1.60, p<0.1, one-tailed).

Hypothesis H6.3a suggests that the difference in transition duration between observation and the normal manual will be higher for high task complexity as compared to low task complexity. Similarly, hypothesis H6.3b predicts the same relationship for observation and the modified manual. For high task complexity, the data from Table 5.5 (Chapter 5) show that observation is faster than the normal manual by 193 seconds (t_{19}= -2.56, p<0.05, two-tailed) but for low task complexity, Table 6.5 shows that the it was faster by only 50 seconds (not significant). Also, the data from Table 6.3 show that that for high task complexity, observation was faster than the modified manual by 193 seconds (t_{19}= -2.56, p<0.05, two-tailed) but for low task complexity, it was faster by only 8 seconds (not significant). Thus, both H6.3a and H6.3b are confirmed suggesting that for low task complexity, the selection of transfer mechanisms (observation, modified manual or normal manual) does not matter, but for high task complexity, it does matter, suggesting the moderating influence of task complexity (graphically illustrated in Figure 6.3).

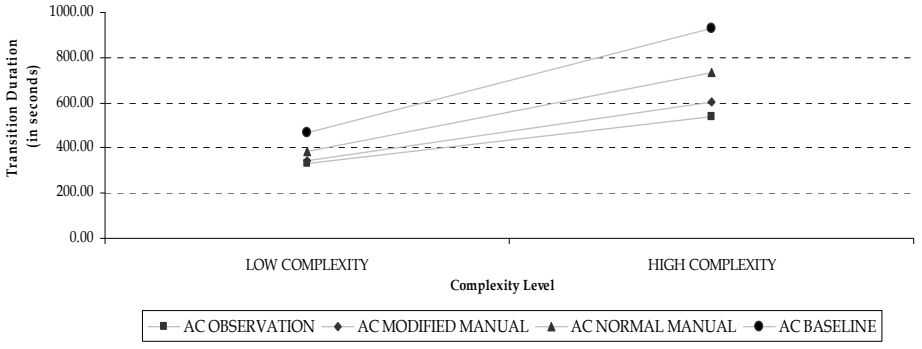


Figure 6.3 Mean Transition Duration values for A-C sessions – High and Low Complexity

Table 6.8 Mean Steady-state Performance values for A-B and A-C sessions – Low Complexity

Transfer Mechanisms	N	A-B Sessions (in seconds)		A-C Sessions (in seconds)		Mean Difference (A-B minus A-C)
		Mean	Std. dev	Mean	Std. dev	
Observation	12	24	8	18	7	6
Modified Manual	11	19	4	16	3	3
Normal Manual	12	21	7	18	4	3
Baseline	12	18	6	20	8	2

Table 6.9 Mean Difference in Steady-state Performance for each Transfer Mechanism pair – Low Complexity

Differences within A-C sessions for Steady-state Performance (in seconds)				
	Observation	Modified Manual	Normal Manual	Baseline
Observation	-	2	0	-2
Modified Manual	-	-	-2	-4
Normal Manual	-	-	-	-2
Baseline	-	-	-	-

Steady-state performance represents the final saturated performance time achieved by a subject-pair. Table 6.8 shows the mean and standard deviation values for steady-state performance for both A-B and A-C sessions respectively for the low complexity setting. Table 6.9 provides the comparison between the A-C sessions for each transfer mechanism for low complexity setting. Next, hypothesis H6.4a and H6.4b suggest that the difference in steady-state performance between observation and the normal manual or the modified manual respectively, will be higher for high task complexity as compared to low task complexity. For high task complexity, the data from Table 5.7 (Chapter 5) and Table 6.5 show that observation is better than the normal manual by 7 seconds (t_{19}= -2.91, $p<0.01$, two-tailed) and the modified manual by 9 seconds (t_{19}= -3.1, $p<0.01$, two-tailed), but for low task complexity, Table 6.9 shows that this difference is 0 seconds (not significant). Thus, both H6.4a and H6.4b are confirmed suggesting that for low task complexity, the selection of transfer mechanisms (observation vs. modified manual or normal manual) does not matter, but it does matter for high task complexity.

6.7 Discussion

In this study, using a similar experimental design as in the previous study, we determine the moderating influence of codification and task complexity on the relationship between transfer mechanism and transition performance. For codification, the results indicate that, as hypothesized, the level of codification moderates the relationship between a direction-based mechanism (the normal manual vs. the modified manual) and transition performance. The modified manual led to better performance than the normal manual. Furthermore, the modified manual was found to be significantly better than training, but worse than observation. The study illustrates that the better the codification practices – such as using templates for providing guidelines and interactive reviews for

increased comprehensiveness - the better the performance[33]. These results reinforce the significance of codification in capturing and transferring of (tacit) knowledge, experiences and routines, and strengthen support for the articulable and implicit dimension of knowledge (Cowan et al. 2000: 230; Hakanson 2007; Leonardi and Bailey, 2008). Therefore, based on the results of this study, we suggest that:

> **Proposition 4:** In an outsourcing setting, adopting codification improvement practices (such as, using templates and interactive document reviews) for a direction-based transfer mechanism, (specifically, job-manuals) will lead to a shorter transition duration than not using these practices.

With respect to task complexity, the results indicate that, as hypothesized, the level of task complexity moderates the relationship between transfer mechanisms (directions-based, i.e. normal manual vs. routines-based, i.e. observation) and transition performance. We find that for the high complexity setting, there is a significant difference in performance between observation and a manual, while for the low complexity setting this difference is insignificant. As task complexity increases, the cognitive load related to task completion also increases, thereby requiring higher expertise and capabilities from an individual performing the task (Campbell and Gingrich, 1986; Klemz and Gruca, 2003; Haerem and Rau, 2007). This expertise and capabilities are developed by accumulated knowledge, learning and experiences (Cohen and Levinthal, 1990; Zwollo and Winter, 2002; Argote et al., 2003), which in the context of transition, is influenced by the choice of a transfer mechanism. Furthermore, findings from previous chapter show that routine-based mechanism, i.e. observation, allows for better transfer of knowledge, experiences and routines as compared to a direction-based mechanism, i.e. manual. Therefore, for a high-complexity setting, there is a significant difference in performance between observation and a manual, while this is not the case for the low complexity setting. Based on the results of this study, we suggest that:

> **Proposition 5:** In an outsourcing setting, for high-complexity tasks, the choice of transfer mechanism (i.e. choosing from routine- or directions-based mechanisms) will influence transition duration, while for low-complexity tasks this will not be the case.

[33] A possible alternative explanation for the difference between the modified and normal manual conditions could be the level of motivation of Subject B for codifying her knowledge, experiences and routines. This was controlled, to a certain extent, as in both conditions there was an additional incentive for Subject B to create a useful manual.

7 CONCLUSIONS

We started this dissertation by highlighting that today's competitive economic landscape compels organizations to continuously develop and evaluate their relationships with other organizations. These inter-organizational relationships (IORs) are extremely critical in the globalized business world for creating value and gaining a competitive advantage (Dyer et al. 2001; Bamford and Ernst, 2003). Despite the enormous growth in these types of relationships, the majority of IORs fail to achieve their expected benefits (Kale and Singh, 2009). We argue that poor execution is largely responsible for the failure of IORs in creating value, as execution is extremely challenging, usually underestimated and has a significant influence on the relationship success. To learn more about execution in an IOR, we focus on advancing the current understanding of transition, which represents the initial execution stage of outsourcing relationships (an instance of an IOR). In this dissertation, with three empirical studies, we examine the transition process and performance in outsourcing using field and laboratory studies. This chapter concludes the dissertation: in the following section we summarize the findings from the empirical studies; we then synthesize the findings by using insights from the empirical studies and related literature to develop a conceptual framework for transition performance; subsequently we discuss the theoretical and managerial implications, particularly achieving transition under time compression (i.e. quick transition) followed by generalizability and limitations, and directions for future research.

7.1 Summary of Findings

In this dissertation, we set out to comprehensively understand and examine the transition stage of an outsourcing relationship. By utilizing a field-study and laboratory experiments, we conducted three empirical studies that critically looked at the phenomenon of transition. The main findings from these three empirical chapters are summarized below.

In Chapter 4, we focus on transition during outsourcing using a longitudinal field-study. The findings reveal that in order to reach the end-state of transition (and beginning of service delivery), the transition stage proceeds through three phases – transfer, adapt, and routinize (see Figure 4.5). The resulting process model conceptualizes the transition phenomenon by explaining and illustrating the triggering conditions, key activities, and outcomes related to each phase. The first phase, *transfer*, focuses on bringing clarity to the scope, allowing the client and vendor firms to align expectations, and involves the key activity of transferring knowledge, experiences, and routines from client to vendor personnel. The second phase, *adapt*, allows vendor personnel to increase their knowledge and understanding in order to perform relatively complex activities and involves evaluating and adapting the governance arrangement between the two firms. The third phase, *routinize*, essentially functions as a full blown test environment of the service delivery stage and allows both firms to validate the modifications pursued in the previous phase. It helps the vendor and client firms to acquire

significant experience by routinizing the structures, processes, and roles and responsibilities to increase performance efficiency. Furthermore, in keeping with the life-cycle archetype (Van de Ven and Poole, 1995: 514-515) these three phases follow a linear sequence and are conjunctive, suggesting that the characteristics or conditions acquired in each phase (i.e. the outcome of the phase, such as knowledge gained in the *transfer* phase or modifications made to operating model in *adapt* phase) are retained and serve as a prerequisite for the next phase. Each phase in the model is necessary and cumulatively adds features in order to achieve the final-end state. Without going through each of these three phases, however minor or short they may be, transition cannot be completed and the service delivery stage cannot begin. Therefore, the findings suggest that these three phases must not only be present but must also follow the illustrated sequence.

In Chapter 5, we specifically focus on the *transfer* phase, which is the first and the most significant phase as its serves as a foundation for the following phases and the subsequent service delivery stage. In this study, we develop a novel experimental design to replicate a real-world outsourcing setting in the laboratory. We compare three fundamental transfer mechanisms – observation, training, and a job-manual (Slaughter and Kirsch, 2006) to determine their influence on transition performance. The results suggest that for observation, the availability of media richness (Daft and Lengel, 1986), social presence (Short et al., 1976), and contextualization (Cordova and Lepper 1996) leads to improved transition performance as it allows for a better transfer of tacit knowledge, experiences and routines (Argote et al., 2003; Nadler et al., 2003).

In Chapter 6, we extend the previous study to determine any moderating influence of codification (by introducing a modified job-manual) (Hakanson, 2007) and task complexity (by introducing a low-complexity setting) (Campbell, 1988) on the relationship between transfer mechanisms and transition performance. The results reveal that a modified job-manual performs better than a normal job-manual, thereby, suggesting that codification acts as a moderator. Also, a modified job-manual is found to be significantly better than training, but worse than observation. This is due to the introduction of two codification practices, in the modified job-manual, which improve the articulation, capturing, and transferring of tacit knowledge, experiences and routines to increase performance (Kogut and Zander, 1992; Zollo and Winter, 2002). The results also reveal that for a low-complexity setting, no significant differences exist among the transfer mechanisms as compared to high-complexity setting (in Chapter 5), thereby, suggesting that task complexity acts as a moderator of the relationship between transfer mechanisms and transition performance. This is because a low-complexity setting creates lower information processing requirements and cognitive load (Tushman and Nadler, 1978; Wood, 1986), which in turn requires lower levels of knowledge and expertise for performance (Campbell and Gingrich, 1986; Klemz and Gruca, 2003; Haerem and Rau, 2007). Therefore, for a low-complexity setting, the advantages of certain mechanisms, such as observation, are not utilized and the differences in the performance of transfer mechanisms are not substantial.

7.2 Understanding Transition

In this section, we present and integrate the insights on transition generated from this dissertation. First, based on the studies answering the three research questions, we summarize five propositions: two propositions related to the transition process (i.e. the process of achieving the final outcome state of transition) and three propositions on transition performance (measured by transition duration i.e. the time taken to reach a certain pre-defined or benchmark performance level). Next, we delve into five key determinants and their influence on transition performance using role and process clarity as a mediating concept. The first two determinants: knowledge transfer and governance structure are captured in the empirical studies, while the subsequent three determinants emerge from the empirical studies (supported with the relevant literature) and are significant for extending our understanding of transition. These determinants are: organizational capability and technological connectivity arising from the field-study observations and modularity originating from the experimental studies.

7.2.1 Transition: Five Propositions

Towards our objective of advancing the theoretical understanding of transition during outsourcing, we develop five propositions from the three empirical studies. These propositions are introduced and described in detail within the discussion sections of each relevant chapter (i.e. Chapters 4, 5 and 6). We reiterate the propositions here:

The first set of propositions focuses on the three phases of the transition process model: transfer, adapt and routinize, and their related triggers and outcomes (necessary for successfully completing transition, refer Figure 4.5):

> **Proposition 1a:** The *Transfer* phase is triggered by the lack of clarity and limited knowledge and ends with achieving adequate knowledge, familiarity and understanding to begin operational activities (i.e. initiate first pilot projects).
>
> **Proposition 1b:** The *Adapt* phase is triggered by the lack of expertise and to determine an effective governance setup for managing the relationship, and ends with achieving adequate expertise (to perform complex outsourced activities) and an appropriate governance setup.
>
> **Proposition 1c:** The *Routinize* phase is triggered by the need to manage high volume of outsourced activities and to validate the governance setup, and ends with achieving adequate maturity with the governance setup and adequate performance levels (as contractually required to end transition and begin service delivery stage).

The second proposition relates to the order and sequence of the three phases:

> **Proposition 2:** In an outsourcing setting, transition process will proceed in three sequential and conjunctive phases: *transfer*, *adapt* and *routinize*.

Next, we examined the transfer phase, by capturing the outsourcing setting in a laboratory experiment and focusing on transfer mechanisms. Three propositions are generated from experimental studies about the dependent variable of transition performance, which is measured with

transition duration (i.e. the time required by the client-vendor combination from contract signing to achieving final end-state of transition and beginning of service delivery):

Proposition 3: In an outsourcing setting, choosing the routine-based transfer mechanism (i.e. observation) as compared to a directions-based transfer mechanism (i.e. training or job-manual), will lead to shorter transition duration.

Proposition 4: In an outsourcing setting, adopting codification improvement practices (such as, using templates and interactive document reviews) for directions-based transfer mechanism, specifically, job-manuals will lead to shorter transition duration than not using these practices.

Proposition 5: In an outsourcing setting, for high-complexity tasks, the choice of transfer mechanism (i.e. choosing from routine or directions-based mechanism) will influence transition duration, while for low-complexity tasks this will not be the case.

7.2.2 Transition Performance: Role and Process Clarity, and Five Determinants

In this section, using the studies and the literature from organization theory, knowledge management and outsourcing as a foundation, we suggest that role clarity and process clarity mediate the relationship between transition performance and its five determinants (see Figure 7.1): knowledge transfer, governance structure, organizational capability, technological connectivity and modularity.

As stated earlier (in Chapter 4, Section 4.1), transition begins immediately after contract signing, and the need to transfer and operationally perform the outsourced activities creates an environment of ambiguity and uncertainty at both the client and vendor firms.. This ambiguity involves, for instance, determining which responsibilities stay with the client firm and which are transferred to the vendor firm, how does this influence the current roles within the client firm, and how will the outsourced activities (to be performed by the vendor firm) be monitored and integrated by the client firm. Therefore, the goal that drives transition is to reduce uncertainty and to gain adequate role and process clarity during the outsourcing relationship in order to successfully manage transition and perform the outsourced activities.

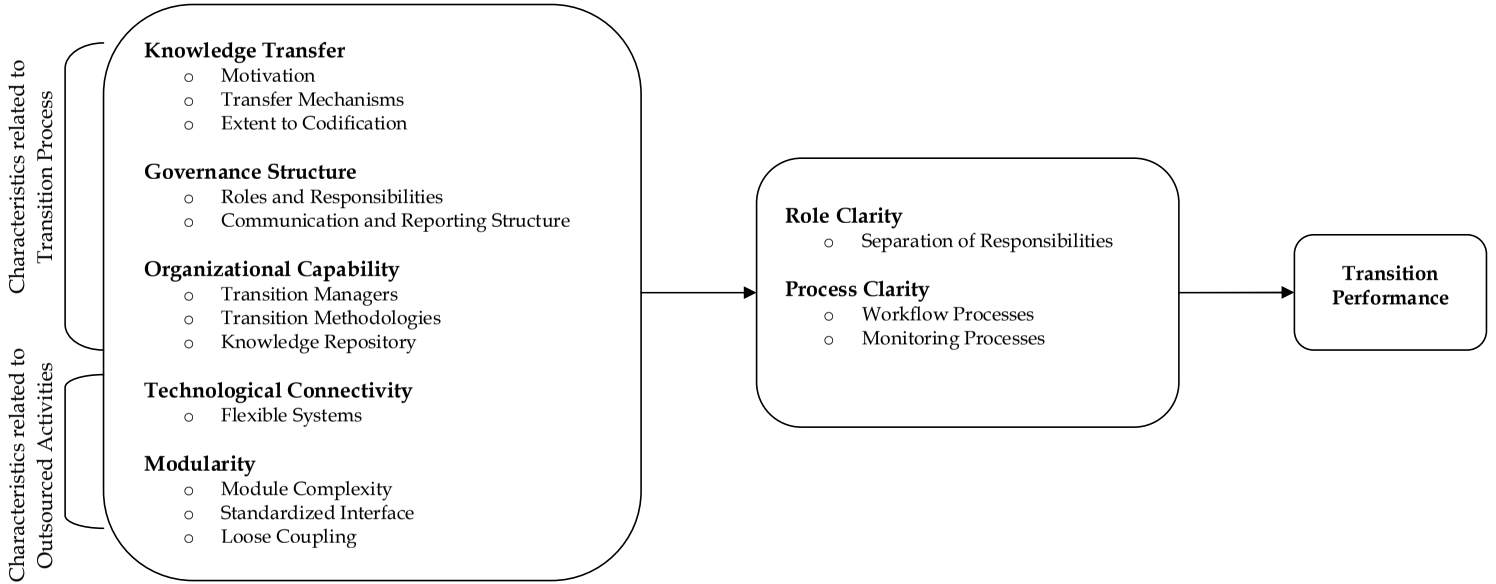


Figure 7.1 Conceptual Framework of Transition Performance

Role and process clarity has primarily been researched in organization theory by studying the absence of it (i.e. the lack of role and process clarity), referred as role ambiguity (Burns and Stalker, 1961; Kahn et al., 1964; House and Rizzo, 1972; Bedeian and Armenakis, 1981). Rizzo et al (1970: 151) define role ambiguity as the "lack of the necessary information available to a given organizational position". In addition, Pearce (1981) argues that it's the unpredictability of the outcomes expected or goal clarity that characterizes role ambiguity (Sawyer, 1992). Furthermore, King and King (1990) suggest that role ambiguity has both an objective or environmental component representing actual verifiable conditions and a subjective or psychological component related to an individual's personality and perceptions. Kahn et al. (1964) suggest that organizational change, such as reorganization and interruptions or restrictions to communication flow can cause role ambiguity. Furthermore, several scholars have shown that role ambiguity, at an individual level, leads to increased stress, decreased job satisfaction and lower self-confidence, thereby influencing organizational outcomes (Cohen, 1959; Kahn et al., 1964; House and Rizzo, 1972). In a study of IS personnel, Baroudi (1985) found similar results suggesting that role ambiguity negatively impacts job satisfaction and organizational commitments. Using the definition of role ambiguity, role clarity can be conceptualized as the availability of sufficient role-relevant information and predictability of the expected outcomes (Lyons, 1971; Ivancevich and Donnelly, 1974; Murphy and Jackson, 1999; Bray and Brawley, 2002).

In the context of transition, role clarity refers to a clear understanding of who (among client and vendor IS personnel) performs what activities prior to outsourcing (i.e. before contractual agreements are signed), during the transition stage and after transition (i.e. in the service delivery stage). In other words, it refers to clarity about the roles that are within the boundary of the client firms and those that are not (i.e. moved to the vendor firm). This involves having a clear distinction between the responsibilities of client and vendor firms pre-transition, during transition and post-transition. Without this clear distinction, a successful transition is not possible as there is a high probability of failure in business continuity due to possible missing roles or increased cost due to overlapping or duplicating roles, thereby, leading to ambiguity and requiring significant coordination and communication effort. Moreover, without explicitly and clearly separating roles, both firms can end up blaming each other for the failure to perform certain activities or responsibilities leading to a poor transition. This suggests that role clarity assists in achieving successful transition performance.

Process clarity (along with goal clarity) has primarily been considered as a component of role ambiguity in the literature (Sawyer, 1992; Hall, 2008). While goal clarity refers to the extent to which responsibilities and expected outcomes are clear, process clarity refers to the degree of understanding of the processes required to achieve those goals (Sawyer, 1992). Although this conceptualization of associating process clarity to role ambiguity serves well at the individual level and holds significance at the organizational level, in the context of transition, it is important to note the distinction between the two dimensions of processes. First, actual workflow processes, which are related to the day-to-day performance of outsourced activities by client and vendor IS personnel; and second, monitoring or

governance processes, which are related to tracking the transition (and in general outsourcing relationship) progress by client and vendor managers. Thus, a lack of clarity on the first dimension refers to not having an adequate understanding of how to perform the outsourced activities, particularly for vendor IS personnel as they need to know how client IS personnel were performing these activities before outsourcing. While the lack of clarity on the second dimension refers to an insufficient understanding or absence of a structured way of tracking, measuring and controlling performance during transition. This particularly affects client managers as they need to monitor how the transition (and the outsourcing relationship) is progressing. Without process clarity, related to both dimensions, it is challenging, for instance, for vendor IS personnel to perform the outsourced activities at the required or contractually stated levels and for the client managers to determine whether transition is advancing as planned or expected. Both of these situations can potentially lead to a failed transition suggesting the importance of process clarity in achieving a successful transition. Next, we present the five determinants that aid in achieving better role and process clarity, thereby influencing transition performance.

7.2.2.1 Knowledge Transfer

Knowledge transfer serves as a foundation and exerts significant influence on transition as depicted both in the field study (with the importance of the Transfer phase) and laboratory experiments (with the impact of transfer mechanisms). It is critical as it involves the transfer of years of accumulated and idiosyncratic client-specific knowledge, experiences and routines related to outsourced activities from client to vendor personnel. The knowledge transfer influences and improves role and process clarity by providing an understanding of what operational activities need to be performed (segregation of responsibilities) by the vendor personnel and how they must be performed (i.e. actual interaction and processes involved). There are three key elements of this determinant, as highlighted by the empirical studies: motivation, transfer mechanisms (along with suitable tools) and the extent of codification or documentation.

Motivation and an arduous (referring to an unpleasant, distant or difficult) relationship between personnel transferring knowledge and receiving knowledge are considered critical factors for successful knowledge transfer (Szulanski, 1996; Argote, 1999; Ko et al., 2005). Similarly, in an outsourcing setting, motivation and relationship plays a crucial role in the transfer of knowledge and understanding between client and vendor personnel (Cullen and Willcocks, 2003). Lack of motivation and an arduous relationship can introduce unnecessary delays and lead to transfer of incoherent or incomplete knowledge, which can potentially ruin the chances of performing successful knowledge transfer, and thereby, successful transition. Organizations use several transfer mechanisms or methods for transferring knowledge during outsourcing, most common methods include manuals, trainings and observations (Carmel and Beulen, 2005; Chua and Pan, 2008). It is challenging to transfer tacit, idiosyncratic knowledge using manuals or trainings, due to their partial inarticulacy; hence observation in the form of job shadowing or reverse job shadowing serves the purpose well in such

situations (CIO, 2004; Lacity and Rottman, 2008). Furthermore, scholars suggest two categories of transfer mechanisms, directions-based and routines-based (Grant, 1996; Slaughter and Kirsch, 2006), while the former is particularly suited for transferring explicit and codified knowledge, the latter is useful for transferring tacit, implicit and embedded knowledge. Using appropriate transfer mechanisms based on the complexity, history and interdependencies related to the outsourced activities, along with utilizing rigorous tools and metrics for tracking the level of knowledge gained or transferred is important for successful knowledge transfer. Moreover, the extent of available codification or documentation related to the outsourced activities also plays a critical role during knowledge transfer. Client organizations with enormous legacy systems, installed in early 1970s, have mostly inadequate documentation accompanying their years of software development and maintenance activities, which inhibit their knowledge transfer, and eventually outsourcing initiatives (Basin and Santhanam, 2001; Schniederjans, 2007). This has received increased attention with the introduction and adoption of frameworks for governing IT function such as, CMM levels, ITIL and CoBIT etc. Laboratory experiments demonstrate that better codification practices lead to improved documentation of idiosyncratic and implicit knowledge, experiences and routines. This codified knowledge aids in cheaper, easier and faster knowledge transfer (Kogut and Zander, 1992; Zollo and Winter, 2002; Hakanson, 2007), hence, contributing to an increase in role and process clarity and leading to a better transition performance.

7.2.2.2 Governance Structure

Along with knowledge transfer, the field study (during the Adapt phase) also reveals the significance of suitable and applicable governance arrangements for transition. The governance structure is necessary because it provides guidelines and protocols for managing the post-contract environment during an outsourcing relationship (Lacity and Willcocks, 2000; Cullen and Willcocks, 2003). There are two key elements, as highlighted by the field study, of this determinant: roles and responsibilities, and communication and reporting structure.

As stated earlier, clarity in the roles and responsibilities of both client and vendor personnel related to the outsourced activities is extremely critical; specifically during transition, and generally throughout the entire outsourcing relationship (Cullen and Willcocks, 2003; Carmel and Beulen, 2005; Cullen, 2009). The lack of clear roles and responsibilities leads to ambiguity, during communication and coordination between both the firms, which introduces delays that are detrimental to the transition performance. In the field study, this element held equal importance for both client and vendor firms. For the client firm, they were careful with modifying, detailing and implementing the roles and responsibilities of their retained personnel after the first set of pilot projects. For the vendor firm, they clearly defined and divided the roles and responsibilities related to the outsourced activities and delivery processes to their personnel distributed across the three sites: onsite, onshore, and offshore.

Another crucial component of governance arrangements is the communication and reporting structure between the client and vendor firms and among their globally distributed teams during transition. Several scholars have reiterated the prevalence of miscommunication and the importance of appropriate communication protocols between and within client and vendor teams during outsourcing relationships (Lee and Kim, 1999; Sahay et al., 2003; Carmel and Tjia, 2005; Hirschheim et al., 2006; Han et al., 2007; Iacovou and Nakatsu, 2008). The field study illustrates the significance of a communication structure; for instance, miscommunication and information overload occurred between client and vendor teams due to the lack of standard communication protocols, thereby, influencing their performance. This was later resolved by establishing a single point of contact for communication for each team. Furthermore, contractual agreements on the reporting structure, procedures and tools are required for monitoring and tracking progress during the outsourcing relationship (Kern et al., 2002; Cullen and Willcocks, 2003; Sparrow, 2003; Carmel and Tjia, 2005; Schniederjans, 2007; Lacity and Rottman, 2008; Hirschheim et al., 2009). These allow client personnel to maintain requisite control by keeping them constantly informed and updated of vendor's performance status and progression related to the outsourced activities (Choudhary and Sabherwal, 2003; Davis et al., 2006). In the field study, a vital potential risk for the client firm (repeatedly stated by the key client IT personnel) was the loss of control of outsourced activities, as the project was their first experience with offshore outsourcing. To mitigate this risk, both client and vendor firms introduced a rigorous reporting format that involved daily and weekly project meetings using teleconferences between key project and senior IT management personnel, and weekly project status reports (documents) for monitoring deadlines and daily effort spent by vendor personnel.

7.2.2.3 Organizational Capability

Organizational capability, here, refers to capabilities similar to an alliance capability (Kale et al., 2002: 749), which is built by an organization through "recombining and/or integrating knowledge" related to experiences and learning from their previous alliances. Several scholars suggest that a firm's ability to form and manage an alliance successfully is dependent on its past alliance experience (Fiol and Lyles, 1985; Simonin, 1997; Anand and Khanna, 2000). Furthermore, Kale et al. (2000: 748) argue that a dedicated alliance function, which allows for "strategically coordinating alliance activity and capturing alliance-related knowledge" and in developing alliance capability, is positively related with alliance success. Similarly, in the context of outsourcing, organizations with greater experience in conducting transition and with a dedicated transition management function will develop capabilities that lead to improved transition performance, for instance, in the form of shorter transition duration or lower transition costs (Dibbern et al., 2008).

In the field-study (Chapter 4), we found that the vendor firm (a global IT services provider) did have extensive transition-related experience and did possess a specific transition management function (involving a core group of transition managers), while for the client firm it was their first experience

with transition in an offshore outsourcing relationship. Based on the insights from the field study and alliance literature, an organizational capability for successfully managing transition includes three key elements: experienced transition managers, proven transition methodologies or approaches and a transition knowledge repository. First, the transition manager's (represented as Transition Lead in the field-study) role is extremely critical for successful transition performance as they develop the transition plan, mobilize key personnel (such as project leads and senior IT personnel), determine governance and reporting structures, and resolve any escalated issues. Several studies have shown the significance of a project manager or a leader for project success (Gaddis, 1959; Slevin and Pinto, 1986; Belout and Gauvreau, 2004), but their importance further increases when the projects are dynamic (relatively turbulent) and globally distributed (Kayworth and Liedner, 2000). Therefore, experienced transition managers, who have overseen multiple transitions with their complexities and challenges, are crucial for transition success. Second, scholars have suggested and demonstrated the importance of methodologies adopted for project success (Saarinen, 1990; Cockburn, 2000; Dvir et al., 2003). Transition methodologies or approaches that have been validated and tested in various outsourcing scenarios are vital for transition success. This is so because these scenarios provide an opportunity to improve the methodologies, leading to a comprehensive and robust library of ideas on how to conduct and monitor knowledge transfer, what are the key performance indicators for completing pilot projects etc. These methodologies initial framework can, in turn, be modified and adapted to fit the requirements of different transition projects, such as those involving simple or complex outsourced activities, an offshore or no-offshore component etc. Last but not the least, knowledge repositories or knowledge management systems assist organizations to better capture, codify and transfer knowledge and experiences generated by its personnel (Tiwana, 2000; Alavi and Leidner, 2001; Poston and Speier, 2005). A transition repository that accumulates best practices, experiences, challenges and solutions adopted by transition managers or other key personnel, in both general and idiosyncratic situations, equips future managers with guidelines or suggestions to better perform transition. Therefore, these three elements allow a firm to develop organizational capabilities to successfully manage transition.

7.2.2.4 Technological Connectivity

Organizations forming IORs require significant technological support, for instance, in the form of inter-organizational information systems[34] that allow the smooth linking of business processes, accomplishing operational coordination, and performing transactions (referring to buying and selling of goods or services) (Barrett and Konsynski, 1982; Holland, 1995; Kumar and van Dissel, 1996; Hacki and Lighton, 2001; Saeed et al., 2005). The tremendous growth of IORs, in recent years, further highlights the importance of these technological systems and their architecture for developing and

[34] For a comprehensive review of theoretical and empirical research on interorganizational information systems refer Robey et al., 2008

successfully executing these relationships (Hong, 2002; Gallivan and Depledge, 2003; Subramani, 2004). Within outsourcing, both client and vendor firms require a stable and reliable technological infrastructure link among their globally distributed sites for several consequential activities: primarily, providing vendor personnel with an access to client software systems, securely sending or receiving work packages (which refers to, for instance, a set of programs to be modified) and jointly tracking project progress (for instance, the effort spent on different work packages, due dates etc.) (Schniederjans, 2007; Tipton and Krause, 2007). For transition, it becomes absolutely necessary that technological connectivity is established as quickly as possible after contract signing, as a delay in building these connections over multiple geographical locations postpones the start of operational performance (e. g. by delaying the initiation of pilot projects) and can significantly impact transition duration. In the field-study (Chapter 4), we found that creating the technological link between client and vendor did create some minor problems, but was not a substantial challenge. Although the link was set up quickly, it did not support all of the required activities, for example, joint project monitoring could not be done using this link and therefore, vendor project leads had to send weekly reports through emails.

Due to recent developments in information and communication technologies, scholars suggest that the inter-organizational information systems and the technological architecture for firms involved in developing IORs must be flexible, for instance, based on open-standards, thereby reducing their asset specificity and switching costs and allowing them to change relationship partners as required (Christiannse et al., 2004; Christiannse, 2005; Zhu et al., 2006). Furthermore, advancing this argument Van Heck and Vervest (2009; 2007) observe that certain organizations, which are part of smart business networks, are conducting business with "anyone, anywhere, anytime despite different business processes and computers systems" (2009: 1). The essential characteristic of a smart business network, and the organizations within it, is the ability to "pick, plug, play and disperse" (2009: 1), which involves the capability of quickly connecting and disconnecting with network partners. From a technological and infrastructural perspective, this requires adopting open digital platforms that allow for loose coupling of individual information systems to form a networked business operating platform (van Heck and Vervest, 2007). For organizations aspiring to continuously develop successful outsourcing relationships, it is vital to acknowledge this new mindset and modify their technological architecture to allow for quick and flexible connectivity.

7.2.2.5 Modularity

Modularity is recognized as a key concept in product and organization design (Sanchez and Mahoney, 1996; Baldwin and Clark, 2000; Ethiraj and Levinthal, 2004; Tiwana, 2008a). Several scholars have suggested the importance of modularity for a firm's performance, for instance, by enhancing its strategic flexibility (Wooren et al., 2002; Pil and Cohen, 2006) as well as for inter-firm relationships by allowing for embedded coordination and reducing control requirements (Sanchez and Mahoney, 1996;

Tiwana 2008a). In various disciplines ranging from evolutionary biology to mathematics and from computer sciences to organization theory, modularity serves as a mechanism for managing complexity (Parnas, 1972; Ethiraj and Levinthal, 2004). Therefore, this determinant is closely connected to task complexity, which in the experimental studies (Chapter 6) is shown as a moderator of the relationship between transfer mechanism and transition performance. The study shows that for a given transfer mechanism, reducing task complexity leads to shorter transition duration. Based on the literature (Baldwin and Clark, 2000; Wolters, 2002; Ethiraj and Levinthal, 2004), there are three key elements of this determinant: module complexity, standardized interface of modules, and loose coupling among modules.

Although high modularity (of any system, product or process) does not necessarily imply lower complexity or lower tacit or idiosyncratic knowledge linked to individual components (parts that constitute a module), scholars have shown that modularity involves decomposability of a complex system into simpler modules along with standardized interfaces to manage interdependencies (Simon, 1962; Sanchez and Mahoney, 1996, Baldwin and Clark, 2000; Langlois, 2002). This suggests that high modularity leads to relatively simpler modules (as opposed to the complexity of the entire system) and requires explicit specifications related to the nature of interdependencies between its components. The difference in the organizational conditions and contextual environment will guide different levels of module complexity. The challenge lies in defining an optimal module – neither too simple nor to complex. Furthermore, modularity refers to both "the tightness of coupling between components" as well as the extent to which "the rules of the system architecture enable (or prohibit) the mixing and matching of components" (Schilling, 2000: 312). In other words, high modularity creates a high degree of independence with loose coupling between modules, which can be dispersed and re-assembled due to standardized interfaces that define "functional, spatial and other relationships between components" (Sanchez and Mahony, 1996: 65).

In the context of outsourced software development and maintenance activities, Tiwana (2008b) suggests that in knowledge-intensive outsourcing relationships, the vendor firm requires a thorough understanding of the client's outsourced activities (and its related knowledge, experiences and routines) as well as the broader context in which these activities integrate. This broader context represents the client's technological portfolio, which refers to the portfolio of hardware, software applications, business processes, databases, and electronic networks in the client firm with which outsourced activities have functional, procedural or informational interdependencies (2008b: 1242). For the client firm to transfer this vast, accumulated idiosyncratic knowledge and for the vendor firm to absorb it, requires substantial resources, particularly higher knowledge transfer costs. Furthermore, for client firms, providing vendors with access to this technological portfolio, on one hand, is necessary for the latter to operate successfully, but on the other hand, introduces potential opportunism-related risks, such as leakage to competitors. In order to balance this Tiwana (2008b) argues and demonstrates that higher modularity (i.e. loose coupling between client's technological

portfolio and outsourced system or activities) allows the client firm to only transfer knowledge related to outsourced activities along with the interface specifications between these activities and technological portfolio. This reduces the need for the client firm to share the broader idiosyncratic context, thereby reducing any potential risks, and also providing additional advantages in terms of lowering knowledge transfer costs (as well as the challenges related to it). Thus, while outsourcing these modular components (as opposed to the entire system), the task complexity levels are lower due to less idiosyncratic knowledge to be transferred and explicitly defined interdependencies. This, in turn, reduces the cognitive load and information processing requirements on vendor personnel and improves transition performance (by decreasing the transition duration).

7.3 Theoretical Contribution and Implications

The theoretical emphasis of this dissertation is to improve the current understanding of transition by studying how transition proceeds during an IT outsourcing relationship and by determining the influence of transfer mechanisms (and possible moderators) on transition performance. This dissertation makes three contributions. First, this dissertation contributes to the IT outsourcing literature by providing the first detailed, longitudinal and rich account of transition in an IT outsourcing relationship. This is strengthened by developing a theoretical transition process model based on a high quality empirical data. This process model conceptualizes the transition process in three phases – transfer, adapt, and routinize and details the triggering conditions, key activities, and outcomes related to each phase. Second, this dissertation contributes to the knowledge transfer literature by focussing on the effectiveness of transfer mechanisms and examining their influence on transition performance. We demonstrate that between the two categories of transfer mechanisms: directions-based and routines-based, the latter leads to a better performance due to improved transfer of tacit knowledge, experiences and routines. This is further extended by demonstrating that codification and task complexity moderate this relationship between transfer mechanism and transition performance. For codification, we validate that for directions-based mechanisms, adopting codification practices (such as documentation templates and interactive document reviews) lead to an improved transition performance. For task complexity, we show that for high complexity tasks routine-based mechanisms lead to better transition performance, but for low complexity tasks no significant differences exist between routine-based and direction-based mechanisms. Third, this dissertation contributes to the methodological approaches by introducing a novel experimental design that can be used to study complex organizational phenomenon, such as transition. This opens an additional methodological avenue for scholars studying IOR, who have mainly relied on survey and case-study methods. Using these experiments, scholars can isolate, control and study specific relationship elements leading to improved causal explanations.

Within the inter-organizational relationship context, findings from this dissertation suggest implications for transaction cost theory, resource dependency theory and organizational learning theory. From a transaction cost theory perspective, with respect to governance mechanism, this

dissertation shows that transition requires strong contractual terms to curb possible opportunism in the form of hidden costs from the vendor firm (Dibbern et al., 2008) but it also requires high relationship-specific investments (Mehta and Mehta, 2010) from the client firm, such as, extremely close collaboration, in working jointly and developing trust in order to relinquish control and allow the vendor firm to take over outsourced activities. The study highlights the temporal dimension for choosing an appropriate governance mode, specifically, immediately prior to transition the contractual mode is preferable, while during transition the relational mode is favourable. Therefore, the study demonstrates the importance of a hybrid mode of governance (Williamson, 1991) (i.e. an interorganizational relationship where exchange partners work closely together) and depicts the significance of balancing both contractual and relational strategies (Griffith and Myers, 2005) for a successful outsourcing relationship (Goo et al., 2009). From a resource dependency theory perspective, this dissertation depicts that during the transition phase close cooperation, intensive knowledge sharing, joint actions, and higher trust between the client and vendor firms is critical to achieve a successful outcome and create value from the outsourcing relationship. Therefore, confirming the significance of joint dependence (Gulati and Sytch, 2007) for relationship performance. As outsourcing relationships are transforming into strategic partnerships, with client firms willing to take greater risks by outsourcing complex activities and vendors firms advancing up the value chain by performing these activities, it is leading to an increase in mutual dependence between these firms (Lacity et al., 1999). From the organizational learning theory perspective, this dissertation suggests that the development of an interorganizational relationship involves more than just the generally stated knowledge transfer phase and that this must be followed by the adapt and routinize phases (see Chapter 4). Furthermore, we focus on determining the comparisons and the consequences of adopting different transfer mechanisms, which has received limited attention both within the organizational learning literature as well as the knowledge transfer literature.

7.4 Managerial Implications

We discuss the implications for practitioners in two parts. In the first part, we present three managerial insights resulting from the empirical studies. In the second part, we return to the practical question expressed during discussions with several IT managers that, in part, triggered this dissertation: why transition takes longer than expected? Based on the insights gained from this dissertation, we explore the scenario of performing transition under substantial time constraints.

7.4.1 Three Practical Insights on Transition

This dissertation provides three insights for practitioners. First, Chapter 4 illustrates how a real-life transition engagement proceeds through distinct phases, triggers, key activities, and outcomes. It provides a transition process model, along with its challenges and solutions, as a reference for IT managers in client and vendor organizations concerned with executing transition in an IT outsourcing relationship. Second, in Chapter 5, we show that the choice of a particular transfer mechanism,

whether it is directions-based (such as a manual or training) or routines-based (such as, observation) influences transition performance. Third, in Chapter 6 we illustrate, to managers involved with outsourcing, that the choice of transfer mechanism for better transition performance is guided by the level of task complexity and the utilization of codification practices, namely using templates and interactive reviews. It demonstrates, rather counter-intuitively, that while observation might always seem to be the best transfer mechanism, this is not the case, specifically, for low complexity tasks, where performance from using a manual (a relatively low-cost mechanism) is similar to that of using observation (a relatively high-cost mechanism). In addition, it also shows that the investment in adopting comprehensive codification practices (such as, following CMM or ITIL framework) can substantially payoff by better capturing and transferring knowledge, experiences, and routines related to outsourced activities, thus leading to a faster transition.

7.4.2 Transition under Time Compression

In this section, based on the insights generated from this dissertation, we look at the practical challenge of performing fast transition, i.e. transition under significant time constraints. The aim of this discussion is to provide practitioners at client and vendor firms with our current understanding for conducting quick transition. We focus on transition duration, which refers to the time taken from contract signing to the beginning of stable operational performance (service delivery stage) at both client and vendor firms. As suggested earlier, we argue that there are five critical determinants of transition performance, which for this analysis mainly concerns the transition duration – knowledge transfer, governance structure, organizational capability, technological connectivity and modularity. Based on these we examine two scenarios, where conditions related to these five determinants determine whether the transition duration will be long (i.e. between months to weeks) or short (i.e. between weeks to days) (see Table 7.1). While the former scenario represents a more traditional outsourcing setting involving global client and vendor firms, the latter scenario refers to a more novel outsourcing setting; for instance, a cloud computing environment, such as Salesforce.com or electronic markets for sourcing services, such as Elance or Rent-A-Coder.

Table 7.1 Determinants of Transition Duration Under Time Compression

Determinants	Transition Duration	
	Long (Months-Weeks)	**Short (Weeks-Days)**
Knowledge Transfer o Motivation o Transfer Mechanisms o Extent of Codification	Lack of client expert's motivation for transferring knowledge, using inappropriate transfer mechanisms, and lack of or missing documentation related to outsourced activities	Client experts motivated for transferring knowledge, using effective transfer mechanisms, and availability of adequate documentation related to outsourced activities
Governance Structure o Roles and Responsibilities o Communication and Reporting Structure	Lack of clarity in the roles and responsibilities and poor or complete absence of communication or reporting protocols between client and vendor firms	Clearly defined roles and responsibilities as well as effective communication and reporting protocols between client and vendor firms
Organizational Capability o Transition Managers o Transition Methodologies o Knowledge Repository	Lack of capability at both client and vendor firms due to inexperienced transition managers, poor transition methodologies, and little or no knowledge repository	Presence of strong organizational capability at both client and vendor firms due to experienced transition managers, proven methodologies, and active knowledge repository
Technological Connectivity o Flexible Systems	Closed and obsolete technology-based systems at both client and vendor firms	Open and collaborative technology-based systems at both client and vendor firms
Modularity o Module Complexity o Standardized Interface o Loose Coupling	Higher module complexity, low standardization of the interfaces, and tight coupling among modules that are outsourced	Lower module complexity, high standardization of the interfaces, and loose coupling among modules that are outsourced

Although the determinants are described in Section 7.2.2, we begin by summarizing them. Successful knowledge transfer involves the, selection of effective transfer mechanisms, high motivation of experts and availability of codified or documented knowledge. An effective governance structure, for managing transition, refers to the clarity of roles and responsibilities, adherence to communication protocols, clear task division, standardized processes, and usage of control or monitoring tools. Organizational capability refers to the ability of both client and vendor firms to better manage transition due to the availability of experienced transition managers, thoroughly tested methodologies, and accumulated and documented best practices (within knowledge repositories). Technological connectivity relates to the flexibility or openness of the technological architecture at both the client and vendor firm. The modularity of outsourced activities leads to a lower complexity of individual outsourced components, standardization of interfaces, and loose coupling among modules. We contend that both successful knowledge transfer and an effective governance setup play an extremely critical role in ending transition and beginning service delivery under any scenario (i.e. irrespective of the length of transition duration). This is because knowledge transfer provides the foundations on which the operational performance of an outsourcing relationship is developed.

Without successful knowledge transfer, the level of understanding required to perform outsourced activities will not be achieved, thereby, making it impossible to provide service delivery. The governance structure provides a framework for administering the performance of outsourced activities and exercising the required control over the relationship. Without an effective governance setup, the relationship will not attain the necessary stability in operational performance to reach service delivery.

Furthermore, we suggest that the next three determinants - organizational capability, technological connectivity, and modularity are consequential for achieving shorter transition duration. This is because a better organizational capability for managing transition provides experienced managers with a wide variety of validated methodologies, best practices and solutions to common transition-related challenges. This, In turn, reduces the need for several iterations to achieve an appropriate governance structure. Advanced or state-of-the-art technological connectivity, involving a flexible and open architecture, allows for the quick and immediate connectivity required for sharing the actual outsourced system as well as for the requisite accompanying data or information flows. Higher modularity of outsourced activities, involves lower module complexity, highly standardized and clear interface definitions and loose coupling among modules. This lowers the level of idiosyncratic knowledge to be transferred, and explicitly defines the functional and procedural interdependencies, thereby, reducing the time required to understand, learn and perform the outsourced activities. Although these three determinants are present in each relationship (since firms posses certain level of organizational capability, technological connectivity or modularity in their activities), it is the extent to which they are present that determines the transition duration. Therefore, for a fast transition or one with a shorter transition duration, it is necessary that positive conditions related to all five determinants must be present, whereas if any of these positive conditions are missing transition will take longer.

7.5 Generalizability and Limitations

In this section, we address the generalizability and limitations of both the field study and laboratory experiments. The field study (Chapter 4) provides an in-depth, longitudinal account to develop the transition process model its phases, triggers, key activities and outcomes, thereby serving as the first step in theory-building by comprehensively examining transition. Due to the strong conceptual nature of the phases, the process model can potentially be applied to various other forms of IT outsourcing relationships, aside from application development and maintenance, such as infrastructure management or IT-enabled service provision. However, the model is developed from a single empirical field study. Thus, conducting comparative studies will strengthen and enhance the generalizability of this model to broader IT outsourcing relationships. With regards to the limitations of Chapter 4, the data collection during the field study involved a majority of vendor personnel (16 vendor personnel compared to 5 client personnel), which could potentially bias the findings in two ways. First, both client and vendor personnel have a perspective on what elements are causing a delay

to the transition progress, therefore soliciting data from a majority of vendor personnel might not provide a balanced view of the actual determinants of transition performance. Second, since the vendor firm has past experience and expertise in performing transition, they can potentially be over critical of the client firm's approach without fully comprehending the complexity or sensitivity of the outsourcing situation. To control for such an influence, two measures were taken, first, the most relevant informants from the client firm were interviewed to ensure the client's perspective, and second, a workshop with client personnel was conducted six months after data collection, in order to present, review and validate the findings.

Although the experimental studies (in Chapter 5 and 6) are conducted in a laboratory, the results are reasonably generalizable to the real-world setting. This is because, as described earlier (in Chapter 3), a controlled environment is best suited for rigorously testing the influence of concerned variables and determining strong causal inferences. In order to determine these causal relationships several highly respected scholars have argued and shown that in order to develop generalizable conclusions it is not necessary to capture the entire real-world, as-is, in the laboratory (Simon, 1955; Weick, 1965; Cohen and Bacdayan, 1994; Weber and Camerer, 2003). However, it is necessary to capture and replicate the key elements of a complex phenomenon in the laboratory and for the experimental studies in this dissertation, we do simulate several key elements of the transition phenomenon (for details, see Section 5.2). With regards to the limitations of Chapter 5 and 6, it is important to note that a critical element, generally recognized as a part of a real-world outsourcing scenario, is not replicated identically in the experimental design. This critical element is the motivation of the client personnel to transfer knowledge, knowing that the vendor personnel will later replace them. While in the real-world scenario, client personnel usually have a low motivation or negative incentive to transfer knowledge due to job security concerns, in the experimental studies the client personnel had a higher motivation or positive incentive due to the monetary award connected to better knowledge transfer. We contend that this is not an issue of faulty experimental design, but an issue of structuring appropriate incentives, which can (and should) be carefully aligned by the client and vendor organizations.

7.6 Directions for Future Research

We conclude this dissertation by suggesting several areas for future research. First, multiple longitudinal studies, involving outsourcing situations with different conditions such as the type of activity (application development and maintenance vs. infrastructure or knowledge processes), the complexity level of the activity (simple vs. highly complex) and the geographical locations (single vs. multiple) are required to strengthen internal and external validity of the transition process model (the three phases and their key activities). Second, with regard to the transfer mechanisms, in order to further capture and contribute to the real-world setting, a subsequent set of experiments can focus on the influence of different combinations of the transfer mechanisms and their temporal sequence (i.e. the order in which transfer mechanism are combined); for instance, comparing the influence of a

manual and training with observation or the influence of a manual and observation with training only on the transition performance. Third, building on the experiments in this dissertation, scholars can add an electronic dimension to these transfer mechanisms, thereby enhancing their relevance to the real-world setting. The transfer mechanisms can be extended to include electronic interaction, for instance, transferring knowledge through video conferencing instead of face-to-face training or using synchronous but textual communication (such as instant messaging) instead of a pre-written manual. To summarize, scholars can focus on the following research questions:

RQ: Under varying outsourcing scenarios, whether and why does transition proceed according to three sequential and conjunctive phases of transfer, adapt and routinize?
RQ: What influence do the different combinations of direction and routine-based transfer mechanism have on transition performance, and why?
RQ: What influence do electronically-mediated transfer mechanisms have on transition performance, and why?

Finally, it is important to note that the novel experimental design used in this dissertation provides a methodological template to capture complex organizational phenomenon in a laboratory and opens up avenues for future research within the field of outsourcing and broader IOR contexts by allowing researchers to capture, explore and test relationships amongst various variables in a controlled environment.

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SUMMARY

In the current economy, we are witnessing an enormous increase in interorganizational relationships among firms, particularly, in the form of IT outsourcing engagements. Although IT outsourcing is now a ubiquitous phenomenon but despite its sharp growth and extensive research, several examples of IT outsourcing failure are prevalent. In this dissertation, complementing the strategic and economic studies on interorganizational relationships and IT outsourcing, we focus on the operational execution challenges inherent in these relationships by examining the transition stage, which starts immediately after contract signing and involves the critical transfer of knowledge, experience and routines related to outsourced activities from client to vendor firm. We focus on the transition stage due to its significance for outsourcing success, its complexity and theoretical richness, and its limited current understanding. Utilizing both a longitudinal field study and laboratory experiments to investigate transition, this dissertation generates important theoretical contributions and practical implications.

In the first study (see Chapter 4), adopting a longitudinal perspective, we capture a real-life transition as it unfolds over time between a Utility company (Saturn) and a Global IT vendor (Apollo). Adopting the qualitative data analysis techniques and process theorizing guidelines, we inductively develop, explain and illustrate the transition process model consisting of three phases – transfer, adapt and routinize. For each phase, we illustrate the triggering conditions, key activities and outcomes for progression to the next phase.

In the second study (see Chapter 5), building on the findings from the longitudinal qualitative field-study (Chapter 4), we focus on the transfer phase, which represents the most fundamental phase and largely determines the success of not only transition but also overall IT outsourcing relationship. To determine the influence of this phase on transition performance, we develop a novel experiment that captures outsourcing and transition scenarios in the laboratory. Using this experimental setting, we focus on understanding the relationship between transfer mechanisms (i.e. methods used to transfer knowledge, experiences and routines) and transition performance. In this study, we select the three basic and most frequently used transfer mechanisms – observation, training and manual. We find that among the three mechanisms, observation leads to the best performance.

In the third study (see Chapter 6), building on the findings from the experiments (in Chapter 5), we focus on strengthening the generalizability of these findings and determining any possible moderating influences. The insights from Chapter 5 reveal that two important variables with potential moderating influence on the relationship between transfer mechanisms and transition performance are: codification and task complexity. Therefore, by utilizing the similar experimental setting but by modifying certain aspects we investigate this possibility. In this study, we introduce another transfer mechanism, modified manual, which involves adopting codification practices that are expected to improve transition performance. We also reduce the task complexity (hence, comparing low and high task complexity scenarios) to determine its effect on transition performance. We find that both

codification and task complexity do have a moderating influence, thereby, further improving our understanding of transition performance.

Finally, in the last chapter we summarize the findings from the field-study and laboratory experiments; we then synthesize the findings by using insights from the empirical studies and related literature to develop a conceptual framework for transition performance. We suggest that there are five key determinants of transition performance: knowledge transfer, governance structure, organizational capability, technological connectivity and modularity. Subsequently we discuss the theoretical contribution and managerial implications, particularly achieving transition under time compression (i.e. quick transition) followed by generalizability and limitations, and directions for future research.

NEDERLANDSTALIGE SAMENVATTING

In de huidige economie zijn we getuige van een toename in interorganisatorische relaties tussen bedrijven, in het bijzonder in de vorm van IT-outsourcing-opdrachten. Hoewel IT-outsourcing inmiddels een alomtegenwoordig fenomeen is, dat nog steeds sterk groeit en reeds uitgebreid is onderzocht, komen een aantal voorbeelden van IT-outsourcing mislukkingen regelmatig voor. Complementair aan eerder onderzoek vanuit strategisch en economisch perspectief naar interorganisatorische relaties en IT-outsourcing, stelt dit proefschrift de uitdagingen in operationele uitvoering van outsourcing relaties centraal. Het onderzoek richt zich op de de transitiefase, die onmiddellijk begint na ondertekening van het contract en behelst de overdracht van kennis, ervaring en routines die betrekking hebben op uitbestede activiteiten van klant naar leverancier. We richten ons op de transitiefase omdat deze van essentieel belang is voor het succes van outsourcing, alsmede de complexiteit en rijkheid aan theoretische inzichten, en het beperkte huidige begrip van dit onderdeel van outsourcing. Gebruik makend van zowel een longitudinaal veldonderzoek en laboratorium experimenten om de transitie te onderzoeken, levert dit proefschrift belangrijke theoretische bijdragen en praktische implicaties.

In de eerste studie (zie hoofdstuk 4), wordt gebruik gemaakt van een longitudinaal perspectief, we observeren een real-life transitie van begin tot eind tussen een nutsbedrijf (Saturnus) en een wereldwijde IT-leverancier (Apollo). Door gebruik te maken van kwalitatieve data-analyse technieken en richtlijnen voor het theoretiseren van processen, ontwikkelen we op inductieve wijze een transitieproces-model bestaande uit drie fases – transfer, aanpassing and routiniseren. Voor elke fase illustreren we de veroorzakende voorwaarden, de belangrijkste activiteiten en resultaten voor voortgang naar de volgende fase.

In de tweede studie (zie hoofdstuk 5), wordt voortgebouwd op de bevindingen uit de longitudinale kwalitatieve veldstudie (hoofdstuk 4). We richten ons op de transfer fase, de meest fundamentele fase die niet alleen grotendeels het succes bepaalt van de transitie, maar ook van de gehele IT-outsourcing relatie. Om de invloed van deze fase vast te stellen op transitie prestaties ontwikkelen wij een nieuw experiment dat outsourcing en transitie scenario's observeert in het laboratorium. Met behulp van dit experiment verkrijgen we begrip van de relatie tussen transfermethoden (methoden gebruikt om de overdracht van kennis, ervaringen en routines te realiseren) en transitieprestaties. In deze studie selecteren we de drie basale en meest gebruikte methoden voor de overdracht - observatie, training en handleidingen. We concluderen dat van de drie methoden, waarneming leidt tot de beste prestaties.

In de derde studie (zie hoofdstuk 6), voortbouwend op de bevindingen van de experimenten (in hoofdstuk 5), richten we ons op het versterken van de generaliseerbaarheid van deze bevindingen en het vaststellen van eventuele modererende invloeden. Uit de inzichten van hoofdstuk 5 blijkt dat twee belangrijke variabelen met potentiële modererende invloed op de relatie tussen de methoden voor de overdracht en transitieprestaties zijn: codificatie en taak complexiteit. Door gebruikmaking van een

vergelijkbare experimentele setting, maar met een wijziging van bepaalde aspecten onderzoeken we deze mogelijkheid. In deze studie introduceren we een andere methode voor de overdracht, gecodificeerde handleiding, hetgeen inhoudt dat gebruik wordt gemaakt van overdracht middels een handleiding, maar dat bij het opstellen van de handleiding voorschriften worden gevolg die naar verwachting de transitieprestaties verbeteren. Ook de complexiteit van de taak is teruggebracht (taken met lage en hoge taak complexiteit worden vergeleken) om het effect daarvan op de transitieprestaties te bepalen. Wij concluderen dat zowel de codificatie en de taak complexiteit een modererende invloed hebben, waardoor onze kennis en begrip van transitieprestaties wordt verbeterd.

Ten slotte, in het laatste hoofdstuk vatten we de bevindingen samen uit het veldonderzoek en de laboratoriumexperimenten en incombinatie met aanverwante literatuur ontwikkelen we een conceptueel raamwerk voor transitieprestaties. We stellen dat er vijf determinanten zijn voor transitie prestaties: kennisoverdracht, governance structuur, organisatorische vaardigheden, technologische connectiviteit en modulariteit. Vervolgens bespreken we de theoretische bijdrage en implicaties voor de management-praktijk, met name ook voor het realiseren van een transitie onder tijdsdruk (d.w.z. een snelle transitie), gevolgd door generaliseerbaarheid en beperkingen, en richtingen voor toekomstig onderzoek.

ABOUT THE AUTHOR

Vinay Tiwari was born on October 30, 1980 in Virar, India. He studied his undergraduate degree in Civil Engineering at Indian Institute of Technology, Kanpur from 1998-2002. From 2002-2004, he worked as a Systems Analyst at India's largest IT firm Tata Consultancy Services. In November 2004, he was selected for a two year MPhil in Business Research program at Rotterdam School of Management, Erasmus University. In the MPhil program, he was awarded with a scholarship. He graduated "cum laude" from the MPhil program with specialization in Information Systems.

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KEY PUBLICATIONS

Vlaar, P.W.L., van Fenema, P.C., and Tiwari, V. 2008. Cocreating Understanding and Value in Distributed Work: How Members of Onsite and Offshore Vendor Teams Give, Make, Demand, and Break Sense. *MIS Quarterly* 32(Special Issue) 227-55.

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TRANSITION PROCESS AND PERFORMANCE IN IT OUTSOURCING
EVIDENCE FROM A FIELD STUDY AND LABORATORY EXPERIMENTS

This dissertation examines the transition stage, which starts immediately after contract signing and involves the critical transfer of knowledge, experience and routines related to outsourced activities from the client to the vendor firm. We focus on the transition due to its significance for outsourcing success, its complexity and theoretical richness, and its limited current understanding. Utilizing both a longitudinal field study and laboratory experiments, this dissertation generates important theoretical contributions and practical implications. In the first study, adopting a longitudinal perspective, we capture a real-life transition as it unfolds over time. Adopting the qualitative data analysis techniques and process theorizing guidelines, we inductively develop, explain and illustrate the transition process model consisting of three phases – transfer, adapt and routinize. In the second and third study, we focus on the transfer phase, which is the most fundamental phase and largely determines the success of transition and overall IT outsourcing relationship. We develop a novel experimental design that captures outsourcing and transition scenarios in the laboratory. Using this setup, we focus on understanding the relationship between transfer mechanisms and transition performance. For this purpose, we select the three basic and most frequently used transfer mechanisms – observation, training and manual. We find that among the three mechanisms, observation leads to the best performance. Subsequently, we focus on strengthening the generalizability of these findings and determining any possible moderating influences. We find that both codification and task complexity have a moderating influence on the relationship between transfer mechanism and transition performance, thereby, further improving our understanding of transition.

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