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RESEARCH ARTICLE

FROM THE VENDOR'S PERSPECTIVE: EXPLORING THE VALUE PROPOSITION IN INFORMATION TECHNOLOGY OUTSOURCING[1, 2]

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Abstract

To date, most research on information technology (IT) outsourcing concludes that firms decide to outsource IT services because they believe that outside vendors possess production cost advantages. Yet it is not clear whether vendors can provide production cost advantages, particularly to large firms who may be able to replicate vendors' production cost advantages in-house. Mixed outsourcing success in the past decade calls for a closer examination of the IT outsourcing vendor's value proposition. While the client's sourcing decisions and the client-vendor relationship have been examined in IT outsourcing literature, the vendor's perspective has hardly been explored. In this paper, we conduct a close examination of vendor strategy and practices in one long-term successful applications management outsourcing engagement. Our analysis indicates that the vendor's efficiency was based on the economic benefits derived from the ability to develop a complementary set of core competencies. This ability, in turn, was based on the centralization of decision rights from a variety and multitude of IT projects controlled by the vendor. The vendor was enticed to share the value with the client through formal and informal relationship management structures. We use the economic concept of

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complementarity in organizational design, along with prior findings from studies of client-vendor relationships, to explain the IT vendors' value proposition. We further explain how vendors can offer benefits that cannot be readily replicated internally by client firms.

Keywords: Outsourcing of IS, case study, complementarity in organizational design, IS core competencies, management of computing and IS, systems maintenance, IS staffing issues, IS project management

ISRL Categories: EL07, AI0102, FB08, BA, AF04, AF0403, USE, AF0412, EE

Introduction

Outsourcing is a phenomenon in which a user organization (client) transfers property or decision rights over information technology (IT) infrastructure to an external (vendor) organization (Loh and Venkatraman 1992b). The brief history of IT outsourcing includes episodes of both high hopes and bitter disappointment. Since Eastman Kodak's landmark outsourcing of its IT services (Applegate and Montealegre 1991), the outsourcing industry has been growing at a staggering rate of about 20 percent a year (Caldwell and McGee 1997). Worldwide spending on IT outsourcing services reached almost $64 billion in 2001; in 2000, IT outsourcing represented about 30 percent of IT budgets (Mason 2000). Despite these numbers, both vendors and their clients are struggling to understand the outsourcing value proposition: can vendors deliver economic and management benefits to their clients that outweigh contracting costs and risks?

A number of studies indicate that the leading reason behind outsourcing is the need to reduce and control IT operating costs (Ang and Cummings 1997; Ang and Straub 1998; Casale 2001; Loh and Venkatraman 1992a, 1992b; Slaughter and Ang 1996), followed by the need to improve management focus and access technical talent not available in-house (Casale 2001; Lacity and Willcocks 1998). The intended benefits, however, often have not materialized (Hirschheim and Lacity 2000; Scheier 1997) and risks are significant (Aubert et al. 1998, 1999; Earl 1996). For example, one study found that only 54 percent of the agreements realized expected cost savings (Lacity and Willcocks 1998). More recently, a Gartner Dataquest Report claimed that about one of every three outsourcing contracts targeting cost reductions failed to match expectations (Caldwell 2002a, 2002b). Moreover, there is evidence that companies are willing to undergo the expense of canceling their contracts and rebuilding their in-house IS capabilities (Buxbaum 2002; McDougall 2002). The mixed success of existing agreements has not, however, led to disillusionment with the concept of outsourcing.

Growth in the outsourcing market signals that firms of all sizes believe that IT vendors will ultimately deliver value (Casale 2001). In fact, outsourcing results have been improving as the practice of outsourcing has matured (Willcocks and Lacity 2000). Variations in outsourcing outcomes call for an investigation of factors that shape the value delivered to clients through outsourcing. The objective of the research presented in this paper was to explore this question from the vendor's perspective. In particular, we examine how vendors create value in the case of application management[3] outsourcing.

The case study presented here contributes to the recent stream of research that uses qualitative data to examine the history of ongoing outsourcing relationships (Kern 1997; Koh et al. 1999; Lacity and Willcocks 1998; Lacity et al. 1995; Sabherwal 1999; Saunders et al. 1997). To explain how vendors provide value, this paper diverts from the more usual transaction cost economics (TCE) (Williamson 1979), institutional theory (DiMaggio and Powell 1983), and neoclassical economics (reviewed in Williamson 1985) accounts of IT outsourcing. Instead, it uses the concept of complementarity in organizational

[3]Application management refers to ongoing maintenance, support, and enhancement activities of all or part of a firm's application portfolio.

design (Milgrom and Roberts 1995), the core competency argument on outsourcing (Hamel and Prahalad 1996; Quinn 1999), and findings from the literature on the vendor-client relationship (Elitzur and Wensley 1997; Kern and Willcocks 2001; Willcocks and Lacity 2000). In this way, the analysis extends neoclassical economics accounts of outsourcing to suggest why many large firms may choose to outsource applications management.

The paper is organized as follows. First, we review existing relevant research on IT outsourcing. We then explain our choice of methodology for collecting and analyzing the data. In the following section, we present an overview of the case. Then we analyze and interpret data from the case using the theory of complementarity in organizational design, and from the standpoint of client-vendor relationship factors, to build a framework for understanding the value proposition for IT outsourcers. Finally, we discuss the contributions this paper makes to research and practice.

Background: Perspectives on Outsourcing

Historically, research on IT outsourcing has focused on the sourcing decision itself, trying to understand why organizations outsource. Drawing on economic literature, such as TCE (Williamson 1979) and the theory of incomplete contracts (Hart 1989), the sourcing decision is often seen as a rational decision made by firms that have considered transaction-related factors such as asset specificity, environmental uncertainty, and other types of transaction costs (Ang and Beath 1993; Ang and Cummings 1997; Ang and Straub 1998; Nam et al. 1996; Nelson et al. 1996; Richmond and Seidmann 1993; Richmond et al. 1992; Walker and Weber 1984). An alternative theory, neoclassical economics (reviewed in Williamson 1985), posits that firms outsource IT to attain cost advantages from assumed economies of scale and scope possessed by vendors (Ang and Straub 1998; Loh and Venkatraman 1992a; Slaughter and Ang 1996). This theory has attained more empirical support in studies of outsourcing decisions than TCE (Ang and Cummings 1997; Ang and Straub 1998; Casale 2000, 2001; Loh and Venkatraman 1992a, 1992b; Slaughter and Ang 1996; Walker and Weber 1984). However, the economies of scale and scope argument would predict that outsourcing has little to offer larger firms, because they can generate economies of scale and scope internally by reproducing the production methods used by vendors. The data on outsourcing, however, indicates that many large firms continue to pursue outsourcing arrangements (Chabrow 2002; McDougall 2002).

Because of the focus on the sourcing decision of firms on average, this set of economic theories is generally not used for explaining outcomes of the outsourcing decision. Alternative theories used to study IT sourcing decisions suggest that sourcing decisions are motivated by political (Lacity and Hirschheim 1993) or institutional (Ang and Cummings 1997; Hu et al. 1997; Loh and Venkatraman 1992b) factors, but again these theories do not help in explaining variability among outsourcing outcomes.

IS research on the value generation potential of an outsourcing relationship has considered three factors: client characteristics, vendor characteristics, and the vendor-client relationship (Goles 2001). A key client characteristic is an understanding of how to manage resources that a firm does not own (Elitzur and Wensley 1997; Henderson and Venkatraman 1990; Kern 1997; Lacity and Willcocks 1998; Lacity et al. 1995; Sabherwal 1999; Saunders et al. 1997; Useem and Harder 2000). This involves, for example, retaining in-house capabilities to ensure that IT resources are adequate and appropriately distributed to meet organizational requirements. It also encompasses vendor selection, relationship management, managerial competence, architecture planning, and monitoring emerging technologies (Currie 1998; Goles 2001; Lacity et al. 1995; McFarlan and Nolan 1995; Quinn 1999). Although there are few in-depth investigations of how firms develop these characteristics, their importance is widely accepted.

The major thrust of the literature on IT outsourcing outcomes investigates various aspects of the vendor-client relationship. From this literature, we learn that informal (interpersonal trust) and formal (contractual) aspects of the relationship are equally important (Poppo 2002; Sabherwal 1999) and need to be developed (Kern and Willcocks 2001; Willcocks and Kern 1998; Willcocks and Lacity 2000). Integrative work on this topic by Willcocks and Kern (2001) suggests that strategic intent as well as technical capability shape both contract structure and interpersonal relationship development. For example, a relationship that aims to tap into the technical leadership capabilities of a vendor to achieve IT efficiency may generate higher value if it is run as a partnership, whereas one that aims to achieve IT efficiency by tapping into a vendor's widely available resource pool may be better managed as a technical supply pay-per-service relationship. A recent survey-based study of outsourcing proposed that higher vendor-client alignment, teamwork, balance of control, and process agility in the relationship will lead to more successful outcomes (Goles 2001). From the standpoint of building effective relationships, we know that certain contractual methods are more conducive to value sharing. For example, empirical studies show strong support for carrot and stick incentives, shorter term contracts, and engagement of multiple vendors (Currie 1998; Lacity and Willcocks 1998). Game theoretic economics models advocate pilot projects (Snir and Hitt 2002), penalties and multiphased contracts (Whang 1992), proper choice between time and material versus fixed-price contracts (McDonnell and Lichtenstein 2002), and risk sharing and reputation building contracting mechanisms (Elitzur and Wensley 1997).

The third factor shaping the outsourcing value proposition is the vendor's own capabilities (Goles 2001; Saunders et al. 1997; Willcocks and Lacity 2000). Despite growing interest in this factor, there has not been an in-depth examination of these capabilities and how they generate value in outsourced relationships. Through theoretical hypothesizing, Goles proposed that the vendor must possess such capabilities as technical competence, understanding of the customer's business, and relationship management. However, we are not aware of empirical investigations of vendors' competencies, which actually create value, and the ability or inability of client firms to instead generate that value internally. This gap in the literature limits understanding of outsourcing outcomes and how value is generated and transferred from vendor to client. By analyzing what a vendor does on a successful outsourcing contract, we can start to explain when and why firms find value in outsourcing.

Methodology

We chose a case study methodology for our investigation of the research question. The case study method is preferred "when 'how' or 'why' questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context" (Yin 1984, p. 16). The investigation of how vendors deliver value in outsourcing satisfied all of these criteria. Specifically, we conducted an *explanatory* case study (Yin 1984, p. 16) with the goal of posing competing explanations and developing new ones. The case study method is well established in IS research, especially when it is used for "sticky, practice-based problems" such as the value delivered by IS services vendors (Benbasat et al. 1987).

Following Eisenhardt (1989), we used the case study to build theory in a grounded and inductive fashion. We drew on a grounded theory approach (Glaser and Strauss 1967) similar to the way it was used by Orlikowski (1993) to develop theory from qualitative data. Grounded theory is a way of iteratively collecting and analyzing data in order to build first a *substantive* theory of a particular phenomenon and than a *formal* theory on its basis (Dey 1999; Glaser and Strauss 1967; Myers 1997). A key difference between our use of the grounded theory and that of Orlikowski was that we found a formal, positivistic theory (i.e., concepts of core competence and complementarity in organizational design) that explained some of our findings, whereas Orlikowski's account was interpretive.

Eisenhardt (1989) outlines the steps necessary for using a case study to build theory grounded in data. After identifying our research question, we reviewed the literature on IS outsourcing and determined that no current theory answered the research question. Thus, we started our work with no theory under consideration and no hypothesis to test—an ideal for this kind of research (Eisenhardt 1989, p. 536). We then proceeded to select our case based on the concept of theoretical sampling so that we could best answer the question posed (Glaser and Strauss 1967).

Site Selection

Since our goal was to understand how vendors deliver value to clients, we needed a case where (1) the vendor provided extensive access to individuals at multiple levels who could describe management practices and how they deliver value, (2) the client acknowledged receiving value from outsourcing, (3) the client was willing to share perceptions as to how the vendor delivers value, and (4) the contract had been active long enough to demonstrate long-term outcomes. The case we studied satisfied all of these criteria. Our site presented a rare opportunity for broad access to a successful outsourcing engagement. This case was *revelatory* (Yin 1984, p. 48) or exemplar in the sense that we had an opportunity to study something previously not researched, but not unique. The research method did not require multiple sites. However, replicating our study to contrast or compare it with studies of less successful outsourcing cases would provide further insights.

Data Collection and Analysis

The study employed qualitative methods to understand the socially rich nature of the vendor's management practices and of the vendor's value, as they were perceived by the client. Data collection took place in the spring of 1998. It involved a variety of techniques including unstructured and semi-structured interviews, documentation, archival records, direct observations, published sources, physical artifacts such as manuals, forms, and project archives, and follow-up e-mail and telephone interviews (Yin 1984). Semi-structured interviews lasted from 40 minutes to 2 hours. Table 1 shows the types of interviewees and number of interviews.[4] One author also observed several project meetings and training sessions on-site.

In addition to ongoing field notes, where the investigator tried to record what was going on without specific focus (Eisenhardt 1989), more targeted interviews and document collection focused on six dimensions of inquiry described in Table 2.[5] Each dimension was aimed at furthering our understanding of the main unit of analysis: a practice by which the vendor provided inimitable value to the client. Our data collection was iterative: as data was collected, major themes were identified to guide further data collection, which then modified or built on prior themes and concepts (Glaser and Strauss 1967)

As suggested by Pettigrew (1990) and Eisenhardt (1989), we broke down data analysis into overlapping phases resulting in three different types of case write-ups. (Table 3 describes the analytical processes associated with each level of output.) We started with a broad definition of the problem, which was sharpened through analysis of relevant literature, on-site data collection, and discussions with academic colleagues. This was followed by an open-ended and generative discovery of main themes, patterns, and propositions from interview transcripts and case notes (Glaser and Strauss 1967) which led to additional data collection. The initial analysis resulted in a case write-up, or what

[4]Interview questions varied by type of participant. Interview protocols are available from the authors upon request.

[5]We identified the initial dimensions for the inquiry in another research setting. This was based on an exploratory study that took place between November, 1997, and February, 1998, and involved a dozen interviews with project managers from different firms. The subsequent focus of the data collection effort was guided by categories that emerged from data in the case.

Table 1. Interviewee Type and Number of Interviews[a]

Interviewee Type	Number of Interviews
Vendor Organization	
Executive Leadership	3
Branch Management	4
Engagement Management	2
Project Management	4
Consultants	5
Client Organization	
IS Department Management	1
Engagement Management	1
Project Management	1
User Managers	4
User Staff	3
Total	**28**

[a]Most of the data collection was conducted by the first author, with the second author conducting three of the interviews with the executive leaders in the vendor organization.

Table 2. Dimensions Guiding the Inquiry

Dimension	Description
Engagement History	Reasons behind the outsourcing decision. Client's prior experiences with outsourcing. Vendor selection process. Size, scope, structure, and length of contracts.
Client's Management Philosophy	Degree of control over operations. Approach to building the relationship with the vendor.
Vendor's Management Philosophy and Processes	Degree of control over operations. Utilization of a software engineering methodology. Approach to building the relationship with the client.
Knowledge Sharing Practices	High-level goal setting. Everyday communication among involved parties. Technology used to support sharing. Collaborative culture. Incentives for sharing.
Staffing Decisions and Challenges	Hiring practices. Training. Assignment rules. Promotion rules. Employee satisfaction. Turnover.
Engagement Success	Critical success factors. Perceived rating of success so far. Areas of concern.

Table 3. Data Analysis Phases

Case Write-Up Outputs	Application to the Case	Responsibilities
Level 1 (Analytical Chronology)	Long detailed description of the history of the client's outsourcing decision, client's organizational context, various vendors' engagement practices and strategies, and the engagement outcomes.	The write-up was largely created by the first author. The second author reviewed and edited the write-up on the basis of interviews conducted by the second author (executive leadership of vendor).
Level 2 (Diagnostic Case)	• Focus on the theme of "How do vendors deliver value?" • Broke the case down into key dimensions: (1) Environmental factors (2) Contractual structures (3) Vendor's practices (staffing, methodology, ownership of process and product, collaborative culture) (4) Engagement challenges • Two separate case write-ups were prepared, one for vendor and one for client, to assure that the confidentiality of both parties was not violated. Participants then provided feedback on the analysis.	Authors worked together on identifying broad themes in the case and the practical implications of the case to be presented to participants. The diagnostic case went through four drafts before being sent to participants. Incorporating participant feedback resulted in the final draft of the diagnostic case.
Level 3 (Interpretive/ Theoretical Case)	• In-depth inductive content analysis of the data from multiple sources. • Preparation of analytical displays, for example, checklist matrices and causal diagrams (Miles and Huberman 1984) to discover relations among subcategories. • Reducing number of emerging themes to develop theoretical clarity. • Link to the broader literature on IT outsourcing, core competencies, resource-based view of the firm, economics of organization, and applications management.	The first author went through the content analysis exercise independently of the second author to produce the first draft of the interpretive case. The second author challenged and debated first author's findings and wrote a different version of an interpretive case based on the chronological case and transcripts. Authors debated interpretation of the case from different theoretical perspectives. The interpretive case went through 40 iterations in 4 years until consensus was reached.

Pettigrew called *analytical chronology* (level 1 output), incorporating multiple levels of analysis. In the next phase, we focused on current strategic concerns of the organizations involved in the study in order to write a *diagnostic case* (level 2 output per Pettigrew). The diagnostic case was presented to the two participating organizations for feedback. We then incorporated the feedback into the case analysis. This iterative process allowed for further development of the analytical framework.

The final phase was to create an *interpretive/ theoretical case* (level 3 output per Pettigrew). Here we further interpreted the narrative developed in prior phases and linked it to conceptual ideas derived from the data and to wider theoretical debates in the literature. In this phase, we relied on content analysis techniques to develop the analytical abstraction from multiple sources of data (Agar 1980). By this time, we had developed major conceptual themes. We then used causal diagrams and checklist matrices (Miles and Huberman 1984) to help us discover relationships among concepts and to do axial coding (Corbin and Strauss 1990). Appendix A shows the result of one such analysis. We read and reread interview transcripts, archival records, and field notes to link empirical evidence to recurring themes and develop new themes. The reexamination of the data led to clarification of concepts and their properties with the goal of incorporating as much data as possible into the inductive reasoning process. In this process, we challenged each other's interpretations of data. Finally, sets of concepts were linked together in a framework that represented client needs, vendor management practices, and market strategies.

In the inductive generation of theory from data, we relied heavily on triangulation of different sources of evidence, which is a major strength of the case study research methodology (Yin 1984). This led to stronger concept development in the inductive theory building (Eisenhardt 1989; Glaser and Strauss 1967). Finally, we compared our grounded framework to various theories from economics of organization and strategic literature, treating them as another data set and doing comparative analysis as suggested by Glaser and Strauss (1967).

The analysis involved consideration of various economic perspectives on firm boundaries, theories on incentives, promotions, distribution of decision rights, and network organizations. We concluded that the concept of complementarity in organizational design (Milgrom and Roberts 1995),[6] along with the core competency concept (Hamel and Prahalad 1996), provided the greatest conceptual insights in analyzing how a vendor generates value, while existing work on client-vendor relationships provided insights into why a vendor shares this value with the client. Table 4 provides an example of how the analytical theme, vendor's control over a variety and multitude of projects fits vendor's competencies and vice versa, was developed from data.

Data Sources

The Vendor

The vendor, ABC,[7] is a medium-sized, decades-old firm, providing large organizations with a variety of IT outsourcing services through a North American network of branch offices. In the decade preceding 1998, the company had demonstrated financial success through an average compound total return over 50 percent a year—much higher than the software industry average of 26.9 percent. Revenues for 1997 were up 40 percent from 1996, and net income for 1997 was up 81 percent from a year earlier.

At the time of the study, ABC's top management considered its Metropolis branch, the focus of this

[6]A paper that provides an in-depth analysis of explanatory power of various economics of organization theories with respect to the case data is available from authors upon request.

[7]The vendor's and the client's company names and locations are disguised.

Table 4. The Development of the Analytical Theme on Vendor Control

Steps	Data
Analyze interview transcripts and level 2 and 3 case write-ups to identify prominent themes	Example of a quote that motivated the investigation of a new theme: One of the benefits of an outsourcing contract, particularly a big one, is that we can control the staffing, so that we can bring people in and rotate people out, and provide good career advancement and good training for our employees, while still maintaining a level of service. The larger the engagement, in general, the more flexibility we have in doing that, so we as an organization can be more successful that way and give more opportunities to our employees. (Vendor's Branch Manager)
Triangulate across sources	Looked for other data supporting and extending the theme: • Vendor's executives reporting on growth achieved through the methodology, personnel career development, and customer relationship management and about using these practices to reduce delivery costs. • Vendor's engagement level management reporting on flexibility afforded by large engagements. • Employees reporting on horizontal and vertical rotations enabling multiple career choices in and across engagements.
Create data display in the form of a causal map	See Appendix A, which indicated that various vendors' management practices were dependent on the vendor's access to many projects and vice versa.
Use all the evidence collected to confirm or reject the theme.	Coded interview transcripts to check the postulated relationship.
Consolidate themes into distinct concepts	Concepts that appeared in the causal map were consolidated: vendor needed scale and scope to reduce the costs of developing competencies, and competencies were used to reduce the cost of delivery on each project.
Generate challenges	For example asked questions such as: • Is an entire practice bundle dependent on managing many projects or just a subset of practices? • Are there practices that are weakening the strategy?
Compare inductive concepts to existing theories, analyze and challenge linkages	Compared inductive themes to management theories: 1. TCE (Williamson 1979) and property rights theory (Hart and Moore 1990) 2. Relational contracts theory (Baker et al. 2001) 3. Knowledge-based view of the firm (Conner and Prahalad 1996; Grant 1996) 4. Resource-based view (Barney 1999; Wernerfelt 1984) 5. Core competency concept (Hamel and Prahalad 1996) 6. Complementarity in organizational design (Milgrom and Roberts 1995) 7. Labor market economics view of outsourcing (Slaughter and Ang 1996) 8. Neoclassical economics
Neoclassical economics and core competency concept provide most insights	The theory was used to reinterpret the theme as saying that the scale and scope in IS services was used to develop an experience-based set of practices that increase vendor's productivity and profitability. This doesn't answer the main research question completely, as it is not clear that a large client couldn't develop these practices in-house.
Link to other theoretical and empirical themes	Link this theme to other themes developed from data or literature such as the analyses of market factors, of each practice, of complementarity among practices, and others.

case, to be one of its most successful regional operations. In addition to consistently high financial results in both profit margins and revenue growth, this branch pioneered a number of operational innovations including software engineering methodology improvements, broader employee recognition programs, and new structures to enable further control over projects.

The Client

The client organization is the Human Resources Information Technology (HRIT) department of Telecom, one of the world's premier voice and data communications companies. Telecom serves millions of customers including consumers, businesses, and the government, and provides telecommunication outsourcing, consulting, and networking integration services to large businesses. In recent years, unprecedented changes in the telecommunications industry, such as the Telecommunications Act of 1996, the emergence of the Internet, and the opening of global markets for worldwide competition, forced Telecom to reevaluate its cost base and streamline its operations. Subsequently, in 1996 and 1997, the company underwent a major restructuring effort, which, among other things, resulted in a reduced IT budget and greater centralization of its IT operations.

Engagement History Overview

At the time of the study, HRIT consisted of about 250 people who were responsible for IT support of the firm's corporate human resource function. Throughout the 1990s, Telecom struggled with decisions on governance of IS resources. The control over budget related decisions was periodically shifted between HRIT and its corporate client, the Human Resources (HR) department. One of the users, an HR department manager, explained the history of the relationship:

> In 1990, all the budget for system development was with HRIT. After a couple of years of tremendous dissatisfaction, the budget was transferred to the user organization and we were then called "the customers." We had the option of where we wanted to spend our dollars, theoretically—be that with HRIT or externally. At that point in time HRIT was at its low point in terms of esteem in the customers' eyes. Most of us, had we really been able to realistically, would have gone out of house to have our needs fulfilled….but HRIT really owned the Human Resource databases so we really needed to work with them and we would've been driving a stick to our heart [if we'd gone outside]. Then I think two or three years ago [in 1995/1996], the money went back to HRIT.

The struggle that the user described was the well-known struggle between the user's immediate need for support and legacy enhancements and the need to invest in corporate infrastructure (e.g., PeopleSoft package and client/server computing). Several users referred to the atmosphere as being political and full of discontent.

In 1993, HRIT was charged with maintaining all systems according to corporate infrastructure standards, which required regular upgrades to software and hardware platforms. At the same time, HRIT was trying to (1) reduce IT maintenance costs, (2) focus on strategic systems (migration to client/server applications and packages), and (3) sustain or improve customer (user) satisfaction.

IT maintenance costs were high because HRIT's organizational processes and incentives were such that individual programmers were engaged in addressing each maintenance request rather than attempting to reengineer the systems and make them run more efficiently. One user commented that the existing IT environment had low interoperability and high levels of redundancy among various systems, making it difficult for HRIT to fulfill its mandate:

> It was an absolute mess. It had to be controlled and organized.

HRIT had morale issues as well. Individuals responsible for maintaining legacy systems had few opportunities to do new development because much of the new development work was handled by outside IT consultants with expertise on newer technologies. Assigning the more interesting development tasks to consultants not only ignited skill envy, it meant that some HRIT managers were over-extended due to the administrative requirements of hiring, training, and compensating ever-changing contracted resources.

A PeopleSoft implementation led to customer complaints about corporate technology platform upgrades and the struggle for enhancements on current (legacy) systems. By 1994, HRIT was concerned about its ability to sustain customer satisfaction. About this time, HRIT's management decided to outsource part of its legacy application support to reduce maintenance costs while providing HR users with a satisfactory response to changing business and technological conditions.

In launching the outsourcing solution, HRIT chose ABC from a set of about 10 existing contractors for a pilot project, which outsourced maintenance for just a couple of applications. ABC was contractually charged with not only maintaining the systems, but with improving processing efficiency so as to reduce data center bills. The pilot project met all of HRIT's cost and quality requirements and led to outsourcing of 25 applications in early 1995. Despite its satisfaction with the pilot, HRIT used a negotiated competitive bidding approach to select its service provider.[8] According to HRIT's management, the biggest factor behind choosing ABC was its demonstrated methodologies and its fit with the clients' needs

The contracts were fixed-price for $13 million for two years with an agreement on the level of service to be provided for the price (called level of service agreements or LOSAs).[9] The agreements specified the number of production calls, corrective maintenance requests, and enhancements to be performed for a given system. The agreements did not include ABC hiring HRIT personnel. Some HRIT employees took early retirement packages offered by Telecom, while others relocated to other Telecom IT departments. The running and performance of the technology was the responsibility of ABC (ABC "had the beeper"), but the financial asset ownership remained with Telecom. Telecom also designated a full-time coordinator to oversee the contract.

At the end of the first full year of the outsourcing contract, HRIT realized estimated cost savings of over $1 million dollars in data center processing costs:

> They did a wonderful job.…After six months we were showing annual savings of somewhere between $250,000 and half a million dollars[10].…They did a very good job and they saved us a lot of money. And they kept our customer satisfaction levels very high. (HRIT's District Manager, the head of HRIT organization)

HR managers (the users) were surprised by the vendor's effectiveness:

> Generally they really do a very thorough job. I can't fault their technical expertise ….If it is approved, by and large they deliver. [Laughs.] I am laughing because we haven't gotten much by way of enhancements that we wanted.… They are as effective as they are allowed to be given the budget constraint. They do their job well. (HR manager)

[8]Negotiated competitive bidding allows bidders to submit a proposal along with follow-up questions. After the client answers the questions, vendors submit new bids based on the new information.

[9]The size of the contract appears to be typical. Even in 2001, 81 percent of contracts were under $25 million with 22 percent between $6 million and $25 million (Casale 2001).

[10]Other estimates placed savings as high as $2 million.

All interviewed users were satisfied with ABC, and some rated the success of their relationship as 9.5 out of 10. The head of HR simply stated, "We are better off."

Subsequent years' results also exceeded HRIT's cost savings and quality of service objectives. In particular, ABC drove down the number of production calls and corrective maintenance requests, which permitted more enhancements to existing systems than anticipated. In 1997, the contract with ABC was extended for a year and, in 1998, a new contract was granted for two years without soliciting competitive bids. At the same time, HRIT handed over seven additional systems for ABC to maintain. ABC was also increasingly taking on separate assignments for system cloning associated with HRIT restructuring, legacy system retirement, and Year 2000 compliance. HRIT's district manager noted that they were very pleased with the results of the outsourcing agreements:

> ABC came in and they were as motivated as we were.…They were really exceptional in terms of delivering more with less.

ABC management was also pleased with the outsourcing outcomes. Like any client relationship, the Telecom contract was important for generating revenues. ABC's branch manager emphasized that her focus was on revenue and profit generation and that the Telecom contract was hitting the mark on both. Perhaps even more important, the Telecom contract provided ABC with access to, and control over, a large engagement. Across its growing list of contracts, this kind of access and control enabled ABC to apply and hone its competencies:

> One of the benefits of an outsourcing contract, particularly a big one, is that we can control the staffing, so that we can bring people in and rotate people out, and provide good career advancement and good training for our employees, while still maintaining a level of service. The larger the engagement, in general, the more flexibility we have in doing that, so we as an organization can be more successful that way and give more opportunities to our employees.…We would be able to successfully propose and engage in these kinds of assignments using our methodology.…The more that we can control and manage, the better it is for us, and if we can do it successfully, the better it is for everybody. (Metropolis Branch Manager)

Case Analysis

ABC's Market Conditions and Practices

Figure 1 illustrates the types of challenges that many IT organizations, including HRIT, were facing in the early 1990s. They were under pressure to simultaneously cut IT costs and respond to rapid business and technology changes.

These needs had to be satisfied in a labor market characterized by high turnover, rising IT workers' salaries, and a scarcity of advanced technical skills (Slaughter and Ang 1996).[11] In addition, legacy application management involved finding ways of motivating workers interested in updating their skills by providing them with opportunities for technical challenge (Lee et al. 1997; McMurtrey et al. 2002). Driven by these internal needs and labor market constraints, prospective clients contracted IT projects out to specialized vendors who had demonstrated that they had developed practices to achieve client satisfaction. In this section, we discuss how ABC (1) developed a set of competencies that addressed market needs and constraints, (2) increased the value of each competency through patterns of mutual reinforcement, and (3) capitalized on its control over relevant decision rights on a growing number and variety of

[11] In 1998, turnover rates of IT staff were approaching 22 percent with predicted raises of as much as 25 percent with every job change (Garner 1998).

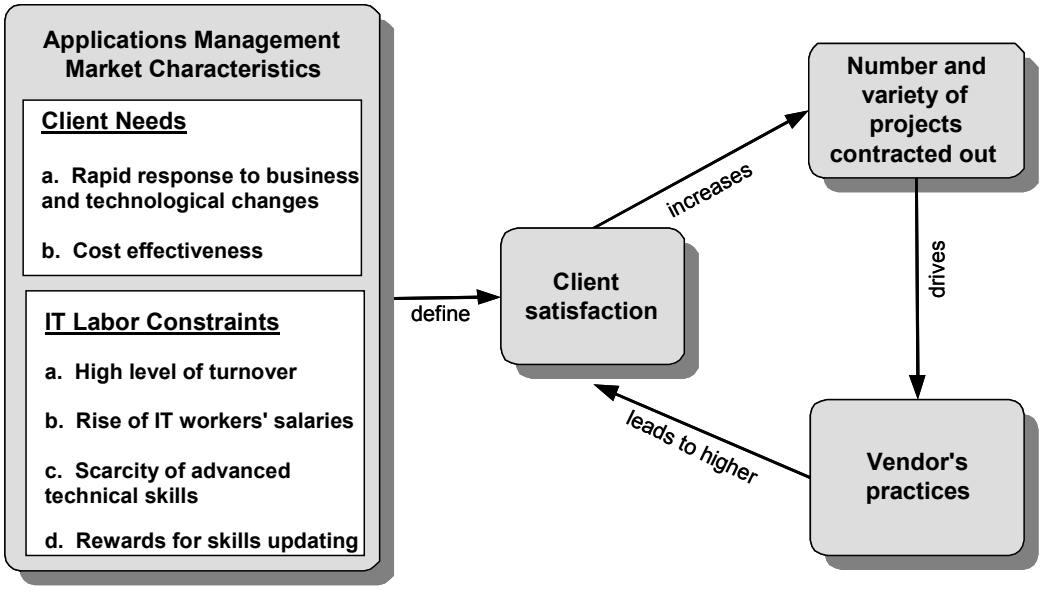

Figure 1. Vendor's Operating Environment

projects to develop competencies and to reduce the marginal costs of service delivery. In the next section, we will show why ABC was compelled to share the value generated by its competencies with HRIT.

ABC's Competencies Addressed Market Needs and Constraints

ABC developed a set of three competencies to respond to client needs and market demands: personnel development, methodology development and dissemination, and customer relationship management.[12] These are summarized in Table 5 and discussed below.

IT Personnel Development addressed existing IT labor market constraints in ways that HRIT had not. ABC replaced experienced, high-cost HRIT staff with mostly lower-cost, junior programmers and then developed their skills through training, mentoring, and team-based project work. Junior staff valued the professional growth while their mentors often relished opportunities to "watch somebody take off." As a professional services firm, ABC viewed maintenance work as a first step in a career development path, which involved rotating professionals within engagements, assigning personnel development managers, and creating both technical and management hierarchies. By creating regular opportunities to learn new skills, interact with team members, and launch more exciting careers, ABC was able to make maintenance work more fulfilling:

> Sometimes the work is not overly exciting. We'll have 20 applications, and we can still move people around within those applications, and you're still learning something new. It may not be the technology, but you can still learn… you never get done learning. We have one guy, for example, who has been here for a year and a half who has been

[12]Researchers' interpretation of the strategy described by case study participants.

Table 5. Summary of Competencies

Core Competence	*Personnel Development*	*Methodology Development and Dissemination*	*Customer Relationship Management*
Constituent Skills	• Staffing office • Promotion from within • Staff rotation • Junior staff use • Redundant skill creation • Mentorship • Skill and project management training • Team-based environment • Collaboration across teams	• Engagement level software engineering process group • Project office • Corporate practice are heads • Identification of best practices • Standardization of processes • Process documentation • Methodology training • Work tasks documentation	• LOSA based contracts • Sharing efficiency benefits (surplus) with clients • Management of client's goals and priorities • Communicating priorities and work status • Sharing expertise with client's staff • Communicating priorities and work status

> on four different applications, all the same technology, and he's loved it. He absolutely loves it, because he's getting something new every six months or so …we can keep the salaries in line and make it more of an enjoyable environment. (ABC engagement manager)

Users did not favor frequent changes in their IT support personnel and cited frequent personnel changes as their key concern with ABC's quality of service. At the same time, users stated that ABC had high quality people and processes to compensate for turnover effects.

Methodology Development and Dissemination was necessary for consistent delivery of best of breed solutions to client problems. Whereas HRIT's staff focused on addressing users' immediate needs, ABC introduced methodologies that focused on overall operational improvements on projects. ABC had a long history of methodology development, which eventually led to adoption of the Software Engineering Institute's (SEI) Capability Maturity Model[13] and enabled ABC to move from level 1 to level 3 certification in less than a year.[14] ABC formalized its methodology practices through its branch project offices, engagement level software engineering process groups, and corporate practice area heads. These structures ensured methodology development, improvement, and compliance. The methodologies not only specified processes, they also standardized project documentation through forms and templates such as change request forms, lost time logs, and weekly status report forms, to closely monitor project status. While HR clients complained about having to fill out long

[13]The Capability Maturity Model (CMM) is a five-level model for judging the maturity of an organization's software processes (Paulk et al. 1993).

[14]According to SEI, between 1991 and 1997, companies took an average of 27 months to move from level 1 to level 2 and 18 months to move from level 2 to level 3. In June 1997 only 12.2 percent of commercial organizations were able to receive level 3 CMM compliance certification or higher.

forms, they accepted this approach as "ABC's way." Both ABC and HRIT credited the methodology development and dissemination competency with introducing significant operational improvements and efficiencies in project delivery:

> Our goal, and I think, if you look at the methodology, this is what's supposed to happen, is to go in and recommend some process improvements. Find out exactly what's causing our problems, what's causing us all the time, and basically that line [points to the LOSA chart] time wise for the production support should come way down, to be almost nothing. Now what the user can see is that that time can be better spent on other things, such as the adaptive MR [maintenance requests], which is changing the system the way they want, such as this Oracle release that's coming down, year 2000 stuff, that type of thing. That's why methodology... allows us to do that stuff. (ABC Engagement Manager)

HR users also saw a significant improvement from ABC's application of methodologies:

> We had too many problems with that part of the system. ABC proposed to deal with that giant troubleshooting [problem] by making a minor adjustment [in the program code]. We got a big improvement. It was really beneficial. (HR Manager)

Customer Relationship Management was formalized through LOSAs. Each LOSA set a fixed price for agreed-upon services:

> The major philosophy of outsourcing is that ABC is taking a risk. ABC is responsible for whatever is defined in that client interface document as being our responsibility. (ABC Branch Manager)

While the LOSA might not lead to greater user satisfaction with the level of IT services, it did reduce uncertainty, thereby creating clearer expectations and an acceptance of limits. As users accepted these limits, they recognized and appreciated services that exceeded contract requirements. LOSAs clarified, for both users and corporate IT, the trade-offs between user needs and corporate development priorities given budget limitations. The negotiation of LOSAs made Telecom define which level of IT service would be necessary and acceptable over a two year time period. The formal structure of the LOSAs was enhanced by ongoing personal communication between ABC and HRIT managers, through which ABC was able to clarify priorities, anticipate resource requirements, and report on issues and changes in project status.

ABC's Competencies Were Mutually Reinforcing

Management practices targeted at one competency tended to enhance the other competencies as well. This reinforcing pattern was apparent in all three pairings of the competencies, as shown in Figure 3 and described below.

Personnel Development and Methodology Development and Distribution. The methodology competency reinforced personnel development by helping junior staff learn quickly what they were expected to do:

> If I don't know in the beginning what the goal is, then I'm flying blind. I don't want to reinvent the wheel, so my incentive to follow [the methodology] is that I would rather use something that's there and has been proven to work than have to come up with it all on my own. (ABC Junior Consultant)

While methodologies were sometimes viewed as constraining individual initiative, one junior consultant argued that the methodology empowered her and others to challenge management directives that might be inconsistent with documented practices. In addition, the standardization of practices around methodology facilitated staff rotations and scheduling.

In the same way, personnel development practices, such as skill development, rotations, and promotion policies, provided training, encouragement, and incentives that led to consistent use and improvement of methodologies across the organization:

> There is a fair amount of cross-pollination here in that when a branch that has limited experience in this starts to do this kind of work, they usually get help from someone who has [experience]. For example, this week I was in Atlanta for three days working with them, so they're going to do pretty much what we would do. (ABC Practice Area Head)

Methodology Development and Distribution and Customer Relationship. When methodology delivered operational improvements, ABC could sometimes increase service levels with no added cost to Telecom. In some cases, ABC had been able to pull people off a project and had elected to share the savings with Telecom. These very visible improvements in IT service levels reinforced the customer relationship:

> As we improve the quality of the delivery of services, we might gain more time. So we might actually increase the level of service without additional cost. It is very common for us because of our methodology to improve or increase the level of service during the contract. (ABC Project Manager)

Methodological approaches also improved customer relationship management practices by defining and standardizing best practices for creating and managing LOSAs.

The customer relationship management competence similarly reinforced the methodology competence. ABC regularly communicated with HRIT to discuss issues and expectations, and one outcome was to help HRIT managers understand the methodologies so that they could facilitate, rather than hinder, ABC's ability to meet expectations. Thus, HRIT managers shared their knowledge of their systems with ABC and provided early warnings, where possible, when business or corporate IT changes might have an impact on ABC's responsibilities:

> They'll call us today, for example, and say, "Hey, I heard about this change that will be coming down." We'll take [that input] and take a high level look at how that's going to affect us. So when a request comes down, we've already got some stuff ready to go. (ABC Engagement Manager)

Personnel Development and Customer Relationship. Personnel development practices reinforced customer relationships by ensuring that staff understood and accepted accountability for meeting contractual obligations. Personnel development practices also developed communication skills to help staff establish customer expectations and build trust. ABC's practice of developing junior staff through project teams and mentors then positioned ABC to deliver:

> [HRIT] may not feel like they're getting their money's worth if somebody was new and didn't understand all the technologies. But out here, since it's fixed price, ABC can sort of suck up some of that initial loss of time due to ramp-up because they decide how many people are out here and how much time that they work. (Junior Developer)

At the same time, strong customer relationships led to better buy-in, on the customer's part, to personnel development policies that required release time or movement of personnel, such as training programs, mentoring, and job rotations:

> [HRIT managers] realize that rotation is a key. They realize that, and they're fans of it....If we're rotating people around and yet keeping them on the Telecom contract, that's fantastic.... But the client feels better with the more people we can get with multiple application knowledge, that's the advantage

> of application outsourcing. If you locked somebody into that job full-time, then nobody is going to win long-term. All the knowledge base is going to be in one area. If that person leaves, then the world shuts down. That's what we're trying to prevent. (ABC Engagement Manager)

ABC's Control over Relevant Decision Rights on a Variety and Multitude of Projects Enabled Growth in Competencies

Consistent with neoclassical economics, ownership of a large number of projects provided ABC with economies of scale in IT services provisioning. Its scale justified its upfront investment in competencies. For example, developing a methodology takes considerable resources, such as corporate development offices, compliance audits, and detailed documentation. However, the marginal cost of applying a methodology to an engagement is lower than regularly rediscovering what works (Banker and Slaughter 1997). Similarly, investing in personnel development management and corporate training programs only pays off when the benefits are shared among many employees, which eventually leads to lower marginal cost of personnel deployment on projects.

ABC's access to, and control over, a large number of diverse projects also bestowed economies of scope that came with specialization in IT services. All three of ABC's competencies were knowledge-intensive, so its broad scope allowed the firm to learn from its experiences and apply its learning to new, but related, situations (Hamel and Prahalad 1996). For example, innovative methodologies resulted from experimentation, documentation, and reuse across many different clients. Similarly, personnel development practices required the ability to offer staff a wide range of experiences. ABC's customer relationship management competency depended on learning managerial skills associated with developing and managing LOSAs, such as communications, cost estimation, relationship building, and metrics design, and fulfilling fixed-price contracts.

Most critically, ABC's control over relevant IT service management decisions on client projects allowed it to simultaneously apply all of its competencies to engagements, thereby deriving the benefits from mutual reinforcement of the competencies. As the branch manager stated, it was the application of staffing and methodology practices to the LOSA-based contracts that allowed ABC to be more efficient and effective on projects.

As shown in Figure 2, ABC's access to, and control over, a large number and variety of IT projects provided economies of both scale and scope. The large number of projects gave ABC an ability to develop and improve competencies, as well as opportunities to reuse its competencies *simultaneously*, so that it could increase client satisfaction. Client satisfaction helped ABC secure additional engagements, which enabled even greater efficiencies in the competencies. In essence, ABC was getting the benefits of specialization in IT services as seen through the core competency lens (Hamel and Prahalad 1996; Quinn 1999).

ABC's three core competencies were valuable in that they addressed the needs of clients and industry constraints. The resource-based view of the firm (Barney 1991; Wernerfelt 1984) would suggest that core competencies are unique resources of the firm, which are hard to imitate by other firms. Nonetheless, it is possible that ABC's potential and existing clients could have developed and applied one or two of these competencies internally. Indeed, many firms outside the IT service industry have done so. The reason why firms purchased ABC's services—or that of another vendor—is because they believed (despite mixed results) that the cost of purchasing these services from a vendor, in both financial and other terms, was less than the combined cost of developing and applying them internally plus the costs of contract monitoring. ABC gained a cost advantage in developing and applying its competencies because it benefited not only from having individual competencies, but also from complementarities among the competencies. The economic concept of complementarities helps us under-

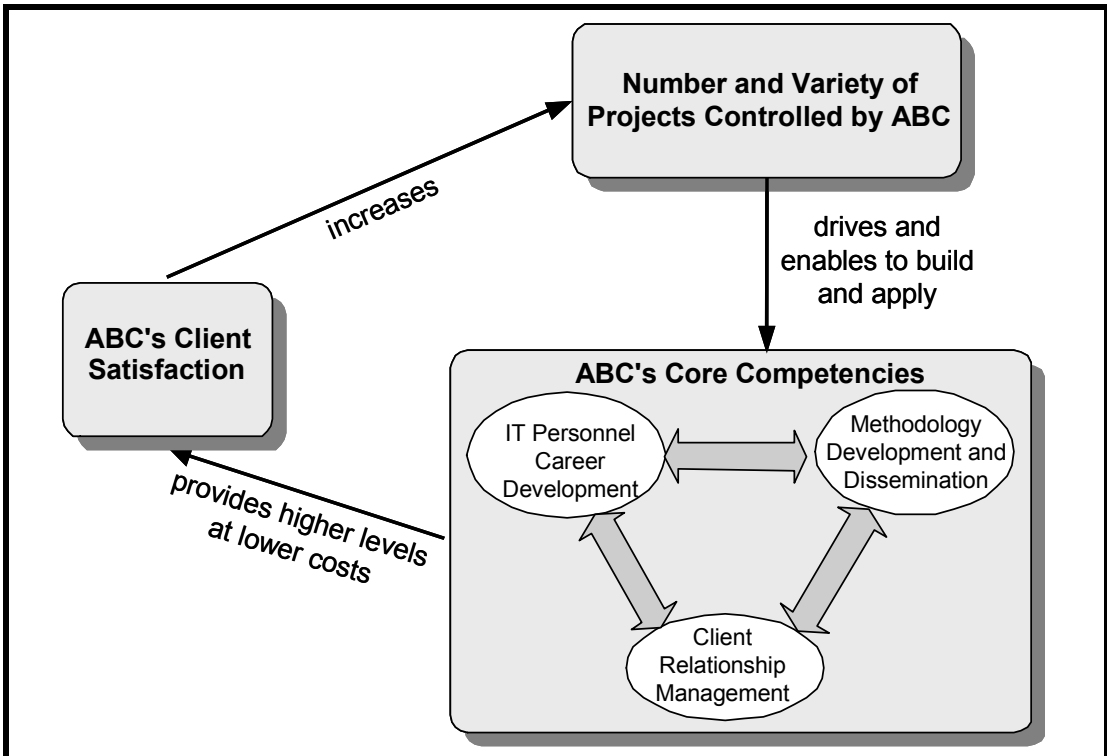

Figure 2. ABC's Core Competencies: Development and Role

stand this phenomenon. The client-vendor relationship literature will help us understand why the clients benefited as well.

Complementarity in Organizational Design

The concept of complementarity in organizational design posits that firms can improve productivity by engaging in complementary activities where benefits from doing more of one activity increase if the firm is also doing more of the other activity (Milgrom and Roberts 1990). This concept draws largely on a mathematical model developed by Topkis (1978),[15] and allows us to conclude the complementarity of a whole system of activities based on pair-wise complementarities. Its major strength is in having no strong assumptions about the differentiability properties of the production function.[16]

This concept of complementarity has been used in studies of manufacturing to show that modern manufacturing approaches work as a system, rather than as a set of independent factors (Ichniowski et al. 1997; Milgrom and Roberts 1995). IS researchers have applied the concept to examine the complementarity of IT investments with other factors. For example, studies by Brynjolfsson and colleagues showed that IT investments were complementary with the distribution of decision authority, human capital investments, and performance-based incentives (Brynjolfsson

[15]Ffor a more technical overview, see Barua et al. 1996.

[16]For further clarification of what complementarities theory is—and is not—see Appendix B.

et al. 1997; Hitt and Brynjolfsson 1997). As a result, firms that invested in IT and adjusted their organizational structure and processes performed better than firms that invested in IT without changing complementary practices. Barua and colleagues built a theoretical model that showed that payoff from IT investments increases when accompanied by reengineering of business processes and changes in decision authority and incentives (Barua et al. 1996) and extended the model in relation to firms' market-based objectives (Barua and Mukhopadhay 2000).

While the term *complementarity* appears broad and can cover a wide range of market- and organization-based phenomena that exhibit positive feedback, we draw specifically on Milgrom and Robert's (1990) development of the concept which pertains to complementarities in the factors of production in the firm's production function. This allows us to conclude from the rich theory and studies of production factors complementarities that those firms that invest simultaneously in several complementary activities perform better than those firms that increase the level of some of these activities, but not others. In fact, literature on complementarity argues that firms that increase one factor without also increasing complementary factors may be worse off than firms that keep the factors at the same lower level (Hitt and Brynjolfsson 1997; Ichniowski et al. 1997; Milgrom and Roberts 1990).

Milgrom and Roberts' (1990) concept of complementarities does not pertain to the fit between firms' competencies and labor market conditions (often referred to as strategic alignment). For example, labor market shortages, or the need to support frequent business changes of the client, are exogenous factors in the production function. The concept, however, pertains to complementarities in endogenous factors that the firm can control. Given certain technological and market factors, the economic theory postulates the effects of relationships among production factors that firms do control on production outcomes.

This concept also does not describe the vendors' and clients' activities as complementary even if the vendors target their competencies to fit client needs. Indeed, vendor and client activities are not complementary because vendors and clients optimize their levels of investments in their core business activities independently, rather than in unison. If vendor and client activities were complementary, it would make sense to integrate them inside firm boundaries so as to have an ability to optimize levels of inputs simultaneously.

Finally, this concept does not refer to the fit between a vendor's access to the variety and multitude of projects and its ability to develop competencies—the traditional core competency argument. This is again because access to the variety and multitude of projects is, for the most part, an exogenous factor to the vendor. At the same time, the concept of complementarities does enhance the core competencies-based argument for specialization in production (Milgrom and Roberts 1992, p. 554). While the core competency theorists argue that experience-based learning lowers the costs of investing in knowledge-intensive competencies (Hamel and Prahalad 1996), the complementarities concept adds that specialized firms would gain a *natural momentum* because applying complementary competencies together increases production and leads to greater market share and, hence, further experience-based learning (Milgrom et al. 1991).

ABC enjoyed a natural momentum in the interplay between gaining control over additional projects and building competencies to deliver results. As already noted,ABC's three core competencies paired to create three complementarities (see Figure 3). Using the economic theory, we conclude, based on pair-wise complementarities among practices, that the whole system (i.e., ABC's production function) exhibited such complementarities. Hence, ABC was best off when it simultaneously raised the levels of all of these activities.

Outsourcer's Value Proposition

The concepts of complementarities and core competencies explain that ABC can increase

productivity and reduce costs on client projects by applying a set of complementary application management competencies. In this section, we examine how ABC delivers value to clients as a result of its ability to develop complementary competencies. First, we go beyond neoclassical economics theories to explain why potential clients are unlikely to develop these complementary competencies internally. We then explore the mechanisms that ensure that the benefits of ABC's complementary competencies are, in part, passed on to clients.

Why Clients Do Not Replicate and Apply ABC's Competencies

Telecom's primary goal was to excel in telecommunications services, which had a different set of market structures and resource constraints than the IT services industry. Accordingly, Telecom had organized into divisions, created organizational structures, distributed decision rights, developed business processes, and hired personnel to address the market conditions and customer demands of the telecommunications industry. Telecom could have attempted to build IT application management competencies rather than outsource to ABC, but, unlike ABC, it might have found that optimizing the development and application of IT competencies would conflict with optimizing core business activities. ABC, on the other hand, could shield itself from these conflicts through the structure provided by the contract, which specified deliverables rather than levels of investment in competencies.

For example, to address labor market constraints, Telecom could increase the compensation of technical specialists, but non-IT workers might perceive the inflated IT salaries as unfair. Similarly, Telecom was not as well positioned as ABC to institute an IT personnel career development office or a practice of IT personnel rotation and promotion. HRIT had tried to institute application management methodologies similar to those used by ABC, but had difficulty changing application development processes that accommodated each user's request at the expense of system-wide improvements. Also, HRIT could have implemented service level agreements (SLAs) comparable to ABC's LOSA, but research shows that internal SLAs rarely satisfy users' desires for a sense of control over IT service levels (Ross et al. 1999).

Evidence from the case indicates that HRIT saw many of the competencies developed by ABC as proper solutions to the business problems HRIT was facing. However, HRIT was unable to implement these solutions internally due to the tension that the centralization of decision authority over IT decisions caused with users. Outsourcing contracts helped manage the boundary with the users clarifying which decision rights would stay with users (e.g., asking which support requests to perform) and which ones would be given to the vendor and HRIT (e.g., deciding how many support requests to perform in a given time period). As an outside firm, ABC experienced less tension at the IT-user boundary because users were focused on contractual obligations rather than on ABC's processes for selecting, assigning, and compensating its staff and implementing its methodologies.

If it could overcome obstacles to centralization of IT decision rights, HRIT might be able to develop and apply one or more application management competencies. Yet, theory supporting complementarity in organizational design holds that developing one or two of ABC's competencies would leave Telecom at a disadvantage relative to the services ABC could offer, because ABC could generate a premium as a result of the complementarities among its competencies. In addition, this premium is likely to grow because specialized firms like ABC tend to grow by offering new kinds of IT services to a wider range of clients (Currie 2000) thereby accelerating the reinforcing effects of the competencies. A non-IT firm like Telecom would put lower priority on increasing the pool of IT projects to provide experience-based learning. Instead, Telecom's IT governance structures would—and should—prioritize projects and grow IT budgets based on business needs, rather than the learning requirements of their IT departments (Brown 1999; Chan et al. 1997). Thus, ABC also

had the advantage of the momentum that results from experience-based learning over time, which non-IT firms—even if they developed similar competencies—could not replicate.

In short, consistent with core competency concepts (Quinn 1999), HRIT could develop competencies similar to those offered by ABC, but it faced more significant obstacles in developing and applying all of them than a specialist IT firm. Specialized firms can focus on optimizing investments in their core business (IT services) and use contractual mechanisms to manage the boundary with other business activities (core activities of their clients). The key insight offered by the notion of complementarity in organizational design is that optimizing business activities involves changing levels of different activities simultaneously, and unless firms have decision rights over *all* related practices, they would be unable to do so. Application management vendors like ABC acquire such rights through service level-based contracts. Many internal IT departments lack this ability as critical decision rights are distributed throughout user organizations and corporate management. In this sense, the *vendor can gain productivity and cost advantages by centralizing some IT decision rights through the structure of a contract so as to develop and apply a set of complementary core competencies in IT service delivery.*

The case presented here focuses on the specific set of competencies that ABC developed to address HRIT's needs for low-cost, high-quality application management and responsiveness to opportunities created by new technologies. These needs, as well as the existing labor market constraints, were typical of many firms in the late 1990s (Bresnahan et al. 2002; Moore and Burke 2002; Slaughter and Ang 1996). Our case, as well as existing literature on outsourcing (Hirschheim and Lacity 2000), indicates that outsourcing often provides efficiency at the cost of flexibility. This was the trade-off that Telecom accepted in the mid-1990s. Nonetheless, client needs can differ from firm to firm and will certainly differ over time. Changes, for example, in the IT labor market, can render some competencies less valuable, while creating a market for new competencies. This study did not examine the implications of changing competencies, but core competency theory suggests that the ability to accelerate experience-based learning related to IT services should provide a lasting value proposition for those vendor firms which recognize and respond to changing client needs.

Why Vendors Share Productivity Gains with Clients

From the client perspective, the outsourcer's value proposition would not exist if the benefits of complementary competencies and strategy accrued solely to the outsourcer. Fortunately, contract-based, interpersonal, and reputation-based mechanisms encourage vendors to share advantages with clients. Telecom effectively deployed some contract-based mechanisms including pilot projects (Snir and Hitt 2002), multiphased contracting with penalties (Whang 1992), interpersonal relationship building (Kern 1997; Lee and Kim 1999; Sabherwal 1999), carrot and stick incentives and shorter-term contracts (Lacity et al. 1995), and competent contract monitoring (Casale 2001; Lacity et al. 1995; Sabherwal 1999). All of these mechanisms increased client control and motivated ABC to demonstrate value to the client. Since the value of outsourcing to the client is very hard to measure, most researchers have focused on client satisfaction (Goles 2001; Lacity and Willcocks 1998; Saunders et al. 1997). In this case, HRIT managers, HR users, and vendors all pointed out that significant cost savings and client satisfaction were achieved.

ABC and HRIT emphasized the importance of building interpersonal relationships (consistent with recommendations of Kern and Willcocks [2001], Poppo [2002], and Sabherwal [1999]). HRIT assigned a full-time engagement manager that interfaced daily with ABC's engagement manager. To obtain support of HRIT's IT personnel, who still remained after outsourcing, ABC emphasized the role of consultants as helpers:

> I remember this one guy....He basically was responsible for all the applications in the running user interface between us and the actual computer operators.…He hated ABC just because they were ABC. In about two or three months he was the best guy in the world. He just called me last week and invited me to go fishing with him. He just retired, and we've given him a lot of information over the years.…Telecom people will tell you that right now. Whatever they need, they can come to us and we'll get them answers. (ABC's Engagement Manager)

Reputation-based mechanisms (Elitzur and Wensley 1997) provided ABC with another strong incentive to share productivity gains with Telecom. These mechanisms have not been studied in depth in the IS outsourcing literature, but are well known institutional incentive mechanisms in economics , sociology, marketing, and strategy (Baker et al. 2001; Fudenberg and Levine 1992; Hardin 2002; Herbig et al. 1994; Low 2002; Weiss et al. 1999; Wilson 1985). A recent study by Goles (2001) also found that IT service vendors focus on reputation building in their relationships with clients. In addition to their current contracting structure, vendors care about their long-term market position. Thus, the vendor is inclined to share benefits with the client so that the information about the vendor's contribution enables it to win future contracts. Developing a solid industry reputation helped ABC win new, and extend existing, engagements, which led to the acquisition of, and control over, more projects. ABC's track record of performance at HRIT helped it win new contracts with HRIT, with other Telecom divisions, and with other companies in telecommunications and other industries. ABC invested heavily in proving its reputation for quality, for example, by investing in CMM compliance certification on many of its engagements. Industry research consulting groups such as GIGA, Gartner, IDC, Forrester, and Jupiter often evaluate the performance of IT service providers, thus influencing their reputations. ABC ranked consistently high in those evaluations. To summarize, ABC was not only able to develop cost advantages, it also had strong incentives to share those advantages with its clients.

The outsourcer's strategy and practices are depicted in Figure 3. This model of the IT vendor's value proposition suggests that client needs, as shaped by market constraints, specify the requirements for client satisfaction. Client satisfaction results from services provided by vendors through the application of a complementary set of core competencies targeted at delivering higher service at a lower marginal cost. Client satisfaction is achieved when the application of core competencies to projects is enabled by a healthy client-vendor relationship, which is in part influenced by the vendor's expertise in managing client relationships. Competencies, in turn, grow through the vendor's firm-wide experience gained from controlling a large number and variety of projects, which, in turn, grow due to the reputation the vendor develops through its ability to satisfy customers. The model represents a set of positive feedback loops, which will result in negative outcomes if, for example, the competencies do not match client needs.

Conclusion

Findings from the case study indicate that an IT application management vendor can deliver value to its clients by developing a set of experience-based core competencies that (1) address client needs and market conditions, (2) exhibit complementarities that result in efficient service delivery, and (3) depend on the vendor's control over, and centralization of, decision rights on a large number of projects from multiple clients. These core competencies result in a compelling value proposition when investing in the growth of any of these competencies in-house conflicts with optimization of the client's core business activities and when contractual- and reputation-based incentives encourage vendors to share the efficiency gained from these competencies with their clients.

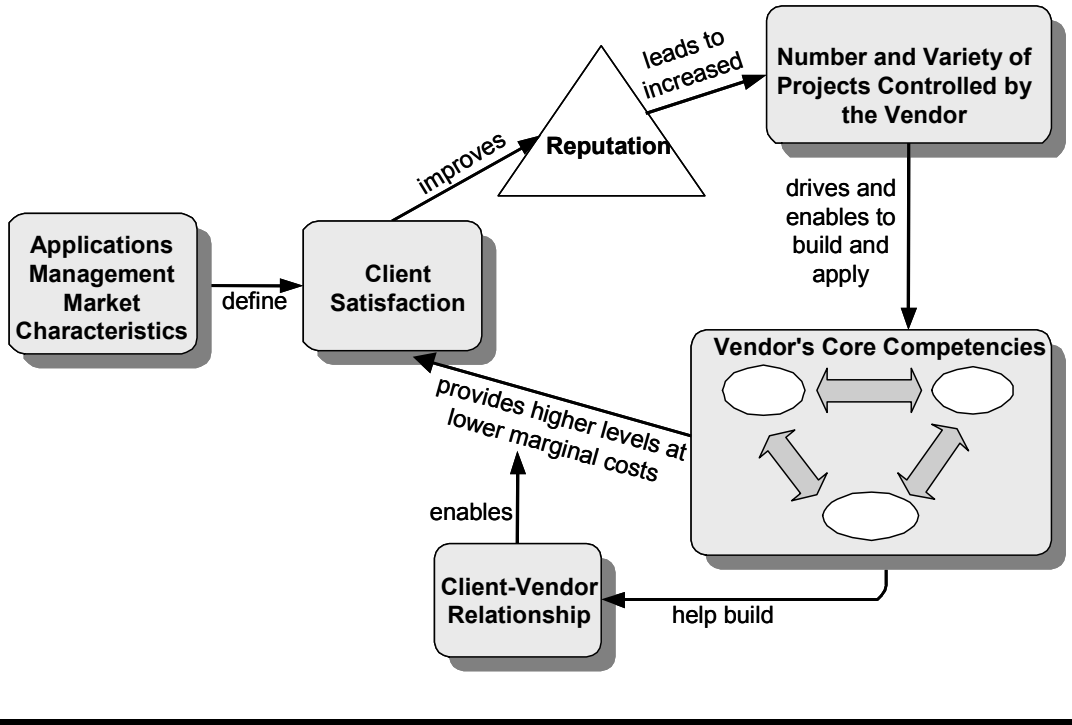

Figure 3. Vendor's Value Proposition

Implications to Research

In this paper, we have added one of the missing pieces to the IT outsourcing puzzle. For the past decade, the majority of research on IT outsourcing focused on client firms' reasons for outsourcing. More recent literature has focused on the outsourcing relationship itself, looking at how different contractual structures and noncontractual aspects of the relationship influence outsourcing outcomes. Finally, some work looked at the client's ability to manage vendors. However, the vendor's perspective has been largely left unexamined.

We have drawn on prior work on the vendor-client relationship and used core competency and complementarity in organizational design concepts to identify the vendor's value proposition. We discovered that IT outsourcing vendors can offer benefits to clients by developing a system of complementary core competencies that depend upon a vendor's control over decision rights on many projects. We have argued that this complementary system is hard to replicate inside non-IT firms because it is likely to conflict with their main business practices. Prior work on IS outsourcing emphasized that the vendor selection process was important and that vendors, at a minimum, had to provide technical expertise and be able to manage the relationship (Goles 2001; Saunders et al. 1997). At the same time, prior work pointed out that cost savings is the number one reason for outsourcing IT services. Our work explains how vendors are able to provide high-level technical capability and manage the relationship cost effectively. More studies of the vendor's side of the outsourcing relationship are needed to develop and validate our case study findings.

The application of the complementarities concept to outsourcing extends neoclassical economics

(Ang and Straub 1998) and labor market-based approaches to outsourcing (Slaughter and Ang 1996) by arguing that, in application management, vendors use economies of scale and scope to combat specific labor market and business conditions by developing complementary practices. It also adds strength to the popular core competency approach to outsourcing (Barney 1999; Hamel and Prahalad 1996; Quinn 1999) by arguing that specialized firms gain momentum in developing world-class competencies due to the complementarities among their practices. We have shown, through the case data, how an IT vendor was able to develop competencies, which were costly to imitate by a client organization—one of the key questions considered in core competency and resource-based views of the firm (Barney 1986, 1991, 1996; Wernerfelt 1984).

A formally described theory of complementarity applied to factors of production is only a decade old and, to our knowledge, has not been used in published studies on outsourcing. While prior IS literature that applied this theory used IT services as an input to production, from the vendor's perspective IT services are outputs of a production function. In addition, our work could be used as a starting point for understanding how the complementarities concept can be used to answer questions on firm boundaries more generally. For example, a firm looking to expand into new marketplaces (vertically or horizontally) may want to examine whether the competencies needed to excel in these markets are complementary, independent, or conflicting with the competencies developed for the current business. This kind of examination would also involve the question of the risk that the firm takes when outsourcing IT services, traditionally addressed by TCE and related theories (Hart and Moore 1990; Richmond and Seidmann 1993; Richmond et al. 1992). It would be fruitful to develop a theoretical model which ties together the trade-offs that firms face between, on the one hand, contracting out to a vendor that has developed a complementary set of core competencies and facing contracting costs and risks and, on the other hand, forgoing the benefits of specialization and complementarity in organizational design. An empirical comparison of different kinds of IS outsourcing, and between IS outsourcing and outsourcing in other services and products, may provide interesting insights on this (see, for example, work in pharmaceutical industry by Azoulay 2001).

While we have not developed formal propositions or mathematical models, future research can benefit from such formalization as well as draw on recent advancements in econometrics of complementarities (Athey and Stern 1998). The greatest advantage of this theory, from the standpoint of econometric studies, is that one does not need to assume a particular production function or even its differentiability to test the theory. Interesting questions to explore on a broad scale include

(1) Do IS vendor practices generally exhibit complementarities?

(2) Do successful internal IS practices exhibit complementarity?

(3) Are those outsourcing arrangements where vendor's complementary practices would not be complementary to client's own practices, if implemented internally, more successful than those where vendor's practices are complementary among each other as well as with client's?

Controlling for client-vendor relationship factors, this latter question would be the most direct test of our theoretical development. One can also test this in different domains of outsourcing, controlling for firm size (economies of scale) and experience-based learning factors.

A future challenge is to understand how firms interested in developing IT competencies can evolve their practices to address changing market conditions. For example, as IT labor becomes less scarce, the set of competencies that clients value is likely to change (McDougall 2002). Yet, when retention of employees becomes less of an issue, concerns about motivation in low-skill jobs remains (Lee 2000; McMurtrey et al. 2002; Moore and Burke 2002). Moreover, there is almost certainly variation in which core competencies are

valuable across IT services other than applications management. For example, having stringent development methodologies might prove detrimental to the success of more creative and innovative application development projects. A closer examination of the evolution of IT market conditions, client needs, and valuable core competencies would seem a fruitful area for future research. Generalizing from our study, we see that centralization of decision rights over a variety and multitude of projects, managing experience-based learning, and value sharing with clients were key factors enabling the growth of competencies. To build a broader theoretical model drawing on these factors, it would be fruitful to look at the literature on dynamic capability development (Eisenhardt 1999, 2000, 2001; Makadok 2001), which examines the interplay between enabling market conditions and firm capabilities.

Implications to Practice

The findings reported here suggest that the benefits of IT application management outsourcing can be significant to firms of all sizes. This is because IT vendors, by virtue of their focus on IT service delivery, have the opportunity to develop a set of core competencies that generate significant benefits and are enhanced through their complementarities. This does not mean that firms necessarily *will* generate benefits from outsourcing. Actual benefits will depend on (1) the ability of the firm making sourcing decisions to determine the consistency between its own needs and the competencies available in the marketplace, (2) the selection of the vendor and management of the relationship, and (3) the vendor's competencies and their complementarities.

First, clarifying the outsourcer's value proposition should help potential clients determine whether outsourcing is right for them. Firms can start by examining the IT service market conditions that they face. They can then look at the competencies developed by IT service vendors and exemplar internal IT departments to address market conditions. They then need to judge whether optimizing the level of investment in and use of these competencies is consistent with optimizing activities in their own core business. Where this is the case, they should be able to generate complementarities similar to those of vendors, and thus would likely realize little or no value from outsourcing. Where firms' core competencies are different from those of vendors, they should recognize the difficulty of first developing important competencies and then applying them together so as to benefit from complementarities. Meanwhile, the growing body of literature on IT governance structures can help firms learn about aligning IT competencies with non-IT activities (Brown 1999; Sambamurthy and Zmud 1999).

Second, vendor selection has been shown to be a critical determinant of outsourcing success (Casale 2001; Saunders et al. 1997). This study indicates that potential clients should focus on vendor core competencies in making the choice. In addition to selecting the right vendor, effective outsourcing appears to require that clients give their vendors some freedom to apply their competencies. This means that they must carefully negotiate the service level agreement, but then give the vendor control over how the contract is fulfilled (Bendor-Samuel 2002). Even though client firms must normally manage the relationship and help with vendor methodology implementation, they also must develop an understanding of how to manage resources that they do not own (Elitzur and Wensley 1997; Henderson and Venkatraman 1990; Kern 1997; Lacity and Willcocks 1998; Lacity et al. 1995; Whang 1992; Sabherwal 1999; Saunders et al. 1997; Useem and Harder 2000). The outsourcing firm retains responsibility for applying a vendor's competencies to practice. For example, clients may need to provide dedicated personnel for relationship management. They may need to work within the host organization to help with vendor methodology implementation, produce documentation, and understand the need for vendor staff rotation. Most importantly, clients must specify their expectations and priorities.

Finally, in order for clients to benefit from outsourcing, vendors must recognize the compe-

tencies that constitute a compelling value proposition. Market needs will change, thus changing the particular competencies that firms will find valuable. For example, by 2002, the market for IT skills had significantly turned around. The need for a personnel development competency concerned with retention was reduced. Other competencies may still be important and complementarities among the competencies will be a critical source of value, but vendors should recognize the need to reassess market conditions and client needs and regularly re-create a complementary set of competencies that addresses them.

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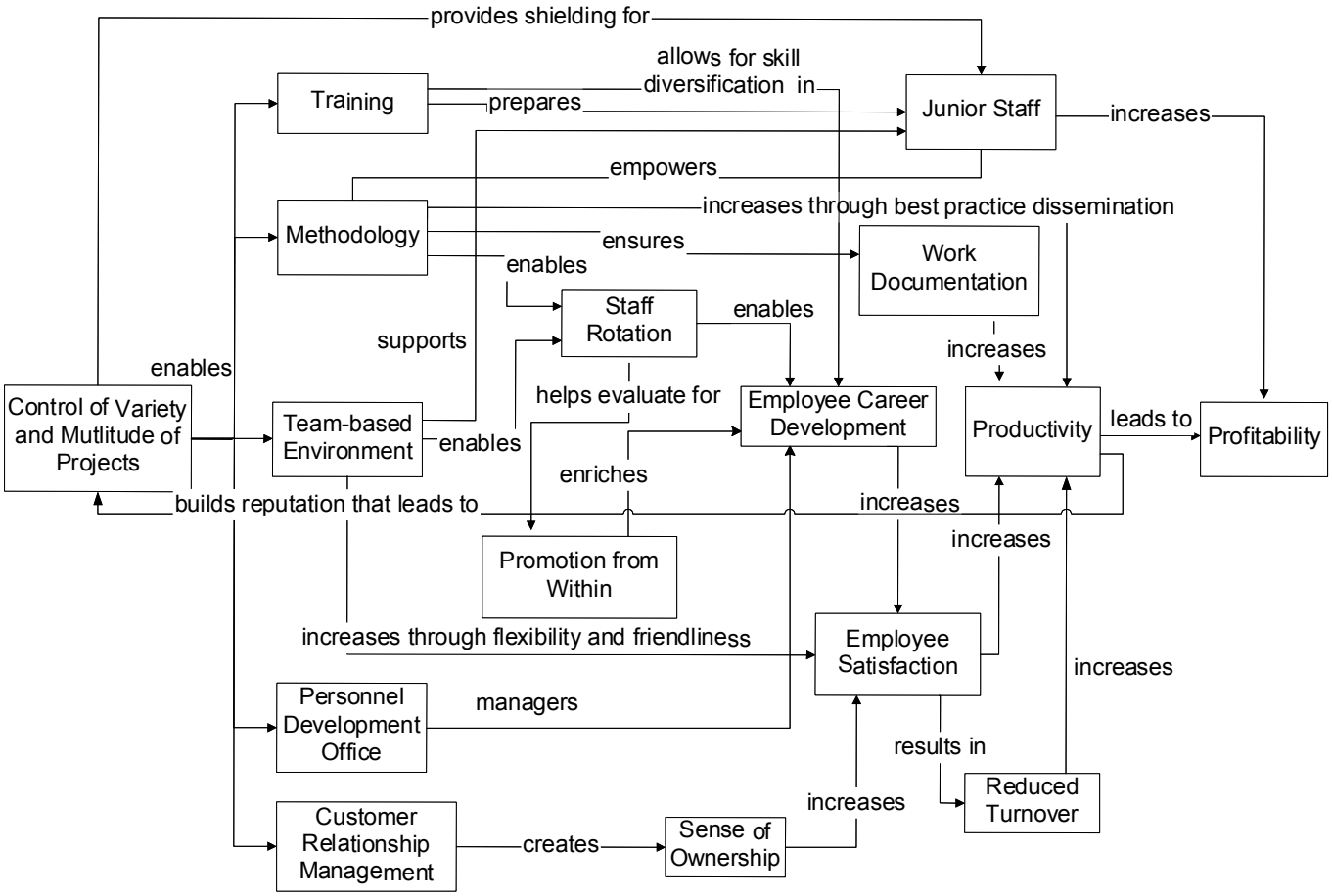
Appendix A

Vendor's Using Control Over Projects to Develop and Use Competencies



Appendix B

A Discussion of Complementarity in Organizational Design Concept

While the economic concept of complementarity among goods in the consumption function dates back to Edgeworth (1881) and Samuelson (1974), the concept of complementarity in organizational design is relatively new. This concept provides a powerful mechanism for defining the relationships between inputs and outputs when, as is usually the case, a production function is unknown. It focuses on mutually reinforcing pairs or bundles of factors. The impact of one factor is complementary with another factor if its impact on outcomes is amplified by the application of one or more other factors. Economic notion of complementarity in organizational design holds that when all inputs demonstrate pair-wise complementarities (i.e., they are mutually reinforcing), the whole system is complementary. This theory is useful in identifying pairs or sets of inputs that work in tandem to produce outcomes.

Although similar, this theory is distinct from the core competency argument. While both concepts focus on a positive feedback among inputs and outputs of the production function, the core competency argument does not focus directly on the pairs or sets of competencies. In their book on the topic Hamel and Prahalad (1996) talk about "bundles of complementary skills," but they do not formalize the notion of complementarity. While complementarities theory derives from economic arguments, the core competency argument is based on learning theories. It says that firms build their skills from experiential learning, (i.e., doing something repeatedly) as in economies of scale and scope: firms build capabilities through experience. For example, if a soccer team plays many games with many different opponents, the team can build a unique style and competence: a core competency in playing soccer. In short, core competency theory refers to the ability to generate desired outcomes by enhancing an input—a specific core competence.

The complementarities argument is also distinct from the concept of fit, which considers exogenous factors, such as market demands. Strategic alignment is the process of fitting a firm's IT capabilities to the demands of the marketplace. This alignment is critical to business success. Marketplace demands, however, are not controllable by firms. Since the theory of complementarity in organizational design is concerned only with endogenous (i.e., controllable) factors, it is not concerned with fit. Certainly, long-term success demands that a firm's complementarities do, indeed, fit with customer needs, but the fit between organizational capabilities and marketplace demands is not germane to the theory.

Soccer can also provide an example for the discussion of complementarities. A soccer player who practices his skills for many hours a day should become a stronger player (this is a basic core competency argument). If he then practices with his teammates and learns his role within the team, his skills will generate value for the team. However, if the player fails to play position properly, the impact of his improving skills in a game situation will likely be quite limited. In fact, a player with improving skills but poor teamwork may disrupt his team (by, for example, stealing the ball from his teammates) and thus, as he personally improves, the team's performance worsens. Thus, the individual player's skill and his ability to play position are complementary input into the team's performance. The theory of complementarities argument is that it makes more sense for the player to split his practice time between improving his position playing skills and his individual skills rather than on one or the other alone. Note that this player's performance, and that of his team, might be affected by weather, field conditions, the skills of the opponents, and the competence of the referees, but those are exogenous factors and thus are not complementary with the

player's skills. They affect both the player's ability to leverage his skills and, conceivably, the performance of the team, but they are not complementary with either.

Hitt and Brynjolfsson (1997) provide an example of the complementarities concept in an IS setting. They observed that increasing IT investments generate higher returns when accompanied by changes in three other factors: (1) distribution of decision authority, (2) human capital investments, and (3) performance-based incentives. Because these four factors are complementary, firms that invested in IT and adjusted their organizational structure and processes performed better than firms that invested in IT without changing complementary practices. In contrast, a core competency argument would be that gaining IT deployment competence could improve firm performance. However, core competency theory would fail to fully explain the phenomenon of what is involved in gaining such competence. It is noteworthy that Brynolfsson and Hitt do not discuss the fit between IT strategy and firm strategy; this would be an alignment argument.