
Innovations in Professional Services Firms engaged in outsourcing of IT Services

by

Shridhar Waman Kulkarni

Submitted to the System Design and Management Program
in partial fulfillment of the requirements for the degree of

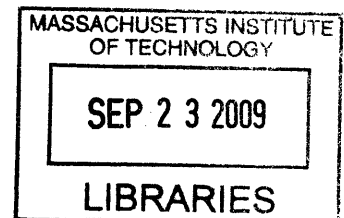
Master of Science in Engineering and Management

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Abstract

The objective of this thesis is to understand the unique features of Professional Services Firms and the challenges associated with effective knowledge management in these firms. A framework is developed to analyze innovations in this industry, based on: type and process of innovation, readiness of the firm for the innovation, alignment criteria, and the effect of the marketplace. Many firms are attempting to implement a Web 2.0-based knowledge management tool to institutionalize the knowledge of their employees. Cognizant is one of the very few who, at this writing, have rolled out a firm-wide Web 2.0-based tool. This innovation is analyzed through the framework, and recommendations are made for Cognizant and other firms in the industry seeking to harness the elusive—yet critical—tacit knowledge carried by employees, for competitive advantage.

Thesis Advisor: **Dean P. Briggs, Ph.D.**

Program Director – Next Generation Student Services System, IS&T, MIT

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1. Introduction

Background and Motivation

Several factors culminated in my decision to go with this topic of studying innovations in IT outsourcing service firms. I have over 10 years of experience in ERP systems in almost all aspects ranging from programming, configuration, business process reengineering, to project management.

I have worked with several Professional Service Firms (PSFs) as employee and as client on various IT projects and was always fascinated by the challenges associated with the ability of the firms to capture and share the most important asset for the firm, the critical knowledge of its staff. Some firms were good at institutionalizing this human knowledge base, but many were not. These experiences and observations have given me a good contextual view on my thesis topic.

As part of SDM, I have taken several courses that have shaped my choice of topic. ‘Generating business value from IT’, taught by Prof. Peter Weill, was instrumental in identifying the role of IT (service versus strategic) in a company. The ‘Human side of technology’ course by Prof. Ralph Katz demonstrated how business decisions are made in the face of data and clear evidence. ‘Technology Strategy’, taught by Michael Davis taught us about the business ecosystem, value creation and value capture. ‘Technology based business innovation’ by Irving Wladawsky-Berger was very useful in understanding and appreciating the “time to market” concept as it relates to innovations. This course also discussed the disruptive technologies and user-centric innovations. Tom Allen’s course on ‘Organizing for Innovative Product Development’ described the organizational structure of companies for competitive advantage and

explained the tension between product development and project management. ‘Leading Teams’ by Prof. Jeff Polzer at Harvard Business School explored the team dynamics and communication in various settings. Finally, ‘Leading Professional Service Firms’ by Prof. Robert Eccles, again at Harvard Business School, elaborated on the different opportunities and challenges faced by PSFs. It was during the introductory class that Prof. Eccles raised the issue of lack of research on innovation in PSFs which crystallized my thinking and helped me finalize the thesis topic.

My goal here is to apply the learning from the above-mentioned courses at SDM and lessons from my own work experience, combined with the research findings and the case study to synthesize an analysis of the innovations that are taking place in the outsourcing of IT services; and to make recommendations to PSFs that are engaged in the business of outsourcing IT services. Throughout this thesis, the focus is on PSFs involved in the outsourcing of IT services. The thesis contains sections where I will discuss PSFs in general, but unless otherwise explicitly mentioned, the discussion is about PSFs in the business providing outsourced IT services.

1.1 Organization of thesis & Research Approach

In Chapter 2, I will describe a business context from which Professional Service Firms can be viewed (emergence of the industry, services offered, clients, and resources). Chapter 3 explains where PSFs are positioned in the business ecosystem. Here I will describe the firms in more detail, the delivery model, and the future trends for the industry.

Chapter 4 defines the analysis framework I have developed and will be using to analyze a given innovation in the knowledge management space, in an IT outsourcing firm. The framework consists of definition criteria that examine the type and process of innovation; and the

degree of alignment with the firm's strategy, its employees, and its clients. The final section in this chapter reviews the market conditions that might impact a given innovation.

Chapter 5 is where we study Cognizant 2.0 (C2), a knowledge management tool based on Web 2.0 technologies, developed and implemented by Cognizant Technology Solutions, a market leader in the IT outsourcing industry. I will first give a brief introduction to Cognizant and C2. This will be followed by the analysis of C2 through the lens of the framework developed in the previous chapter. The research work described in this chapter included collecting quantitative and qualitative data from the company and other independent sources that aided analyzing C2.

Chapter 6 discusses the framework developed and the data collection method. This chapter takes the analyses beyond one firm and explores how these innovations may be diffused through the industry. Chapter 7 discusses the implementation of C2, how it impacts Cognizant, its employees, its clients and Cognizant's competitors. This chapter draws some inferences from the research conducted, provides recommendations for Cognizant, and suggests directions for future research work in this area.

2. Overview of Professional Service Firms

In this chapter I will describe what a Professional Services Firm (PSF) is, the different types of PSFs, what kinds of services they provide, and who their clients are. The discussion will then focus on PSFs engaged in outsourcing of IT services and explore the industry, service providers, and clients. I will also describe how the IT outsourcing industry differs from other types of PSFs. This chapter will also discuss some of the unique aspects of this industry and lay the groundwork for the next chapter that will explore the market place for PSFs in the IT outsourcing industry in more detail.

2.1 Introduction to PSFs:

Professional services are infrequent, technical, or unique functions performed by independent contractors or consultants whose occupation is the rendering of such services [1].

PSFs exist to solve complex problems for their clients. Typically, the nature of the work that PSFs engage in is both knowledge-based and project-oriented. Hence, PSFs tend to attract people who are highly achievement- oriented, with higher tolerance for ambiguity and greater need for autonomy and variety than the population as a whole. In fact, 65% of the graduates from top management schools in U.S join PSFs [2]. PSFs are an amalgam of very smart professionals working together on significant client problems. These professionals are “a different breed of cat” [3]. They are typically difficult both to manage and to keep challenged. Tierney and Lorsch argue that “The central difference and distinguishing characteristic of the PSF business model is its reliance, its absolute dependence, on skilled and motivated professionals” [4]. The Wachtell-Lipton law firm offers a representative example of a PSF. The firm is very selective about the

type of work, profile of the clients, and the type of lawyers it seeks. It typically engages in high-stakes cases. Wachtell-Lipton topped the list of American law firms in revenue per lawyer at \$2.45 million for year 2008 (the firm in the second position generated \$1.48 million in revenue per lawyer) [5].

2.1.1 History of PSFs:

Almost all businesses (from Fortune 500 to medium and small companies) worldwide seek services from PSFs. This need is very visible for law and accounting services. Most of the prospective client firms tend to have their own internal staff that offers operational support for accounting and legal services; but if they need to address an issue that is beyond their experience and expertise, they approach PSFs in that line of business. These PSFs will have worked with several such cases for other firms and thus developed deep expertise in their specialty areas of work. These PSFs can resolve issues for their clients much more efficiently than clients' internal staff could have. For example, for an auto manufacturer, hiring and keeping the best Mergers and Acquisitions (M&A) lawyers on its payroll may not be a feasible option if it were to engage in M&A activity once in a decade.

The age of the professional specialty has a bearing on the length of time that external professional services have been available to client firms. Some of the law firms date back to the 18th century. Management or Strategy Consulting started in the early 20th century. McKinsey, founded in 1926, is the pioneer in this industry. Some types of the professional service are fairly new. Executive search and IT consulting are some of the new ones. Outsourcing of IT services, for example, is only two decades old.

The following section provides an overview of the various types of professional services available, firms offering those services, and their clients.

2.1.2 Types of PSFs, example firms, services offered, and typical clients:

PSFs largely can be classified according to the types of services they provide. Services include some of the well known types, including Accounting, Law, and Strategy Consulting; and some new services such as Executive search, Private equity, IT outsourcing. The following section gives some examples of leaders in various professional services sectors.

2.1.2.1 Law:

Clifford Chance International (U.K.), with \$2.66 billion in revenue, tops the global list. Seventeen firms have over a billion dollars in annual revenue [6].

2.1.2.2 Accounting:

PricewaterhouseCoopers, Ernst & Young, Deloitte, and KPMG; each with over \$2 billion in revenue, and presence across 5 continents, are the industry leaders in accounting [7].

2.1.2.3 Strategy Consulting:

McKinsey & Company, Bain & Company, and Boston Consulting Group are the big three in the Strategy Consulting segment. These firms tend to be very selective in the assignments they seek, and in the type of clients for whom they work. Strategy consulting is at the top of the value chain; offering the PSF attention by C-level executives at client firms, and providing very high revenue per partner.

2.1.3 One Unique feature of PSFs:

It is important to note that the firms described above (law firms, accounting firms, and strategy consulting firms) are typically engaged in “practice-based” [8] work. Their services are based on utilizing a codified body of knowledge in solving client problems. This body of knowledge is agreed on, but is also constantly evolving. In applying their body of knowledge, PSFs use judgment, experience, and in many cases, creativity to solve client problems [9]. These PSFs clearly differ from traditional businesses such as manufacturing and retail. In the case of PSFs, neither the work nor the solution is well defined. Analysis and resolution relies heavily on the ability and knowledge of the professional involved. They might use some products (such as software tools for modeling purposes), but these products are not central to the service.

The Section below will focus on the PSFs engaged in the outsourcing services and describe some of the similarities and differences with the practice-based firms.

2.2 PSFs engaged in outsourcing of IT services:

This section, will first describe the type of professional service these firms offer. It will be followed by a brief history of this industry, a review of the outsourcing firms involved in this business and their clients, and then conclude with current status and anticipated future directions for this industry.

2.2.1 Difference between traditional PSFs and IT outsourcing firms:

PSFs engaged in the business of outsourcing of IT services are not pure practice-based organizations. In IT, the services are a combination of both practice and product. The existence of a product or products, whether developed by the firm or a third party, coupled with the needs of a client for such product(s), creates the need for the professional service. These firms are, in a sense, more product-based organizations than practice-based organizations. Generally speaking, the more product-intensive a firm is, much closer it is to the corporate model in terms of organization structure and functions [10].

2.2.2 History of IT outsourcing services:

Until the early 1980s, software development was largely an in-house exercise, with a heavy emphasis on quality. Outsourcing of IT services is a relatively recent phenomenon. Several factors contributed to the emergence of this market. They include:

1. Technological advancements in the way software is built and distributed,
2. The large pool of skilled programmers in developing countries such as India, China, and those in Central and Eastern Europe,
3. Widespread availability of the Internet for global network communication,
4. The globalization of businesses in PSFs' client base,
5. Desire on the part of firms to leverage service providers to reduce the cost of IT development and maintenance.

6. An emphasis on quality through process and methodology disciplines, such as Capability and Maturity Model certification, in order to maintain the quality focus formerly provided by in-house software groups once these activities move outside the firm.

At first, outsourcing of IT services was attractive to clients as a means for reducing IT-related costs. PSFs in this industry leveraged the technological advancements in the internet and communication industries; and the pool of highly skilled and inexpensive labor in countries such as India. From 1996 to 1999, Indian companies earned \$2.5 billion providing Y2K solutions to Western clients; and by 2000, they had earned \$4 billion serving more than 200 of the Fortune 500 companies. Between 2001 and 2006, India's IT off-shoring firms collectively grew at an annual rate exceeding 40% [11]. Vendors started to establish processes and tools to improve the delivery of services.

The IT outsourcing business has gone through several refinements over the last several years. Iterations have included experimenting with different engagement models: onsite, offshore, some combination of the two, and the present day Global Delivery Model (GDM). It should be noted that this model has diffused into IT consulting from other types of consulting industries. Apparently, the business strategy in the IT outsourcing industry is evolving similar to that of other PSFs engaged in other kinds of services, such as law or accounting. These professions (accounting and law) have been around much longer and have gone through comparable business model changes from being local to global, to serve their global clients.

2.2.3 Firms in the IT outsourcing industry:

This section provides an overview of the major players involved in this business.

Per Gartner's Magic Quadrant report for the IT Outsourcing Industry [12], the following firms are in the Leader quadrant: Accenture, IBM, Infosys, Wipro, Tata Consulting Services (TCS), HCL Technologies, and Cognizant. I will elaborate more on the Magic Quadrant and these firms in the next chapter on Market Analysis.

Beyond the traditional U.S.-based and India-based suppliers, there are few offshore-focused suppliers with revenues approaching \$1 billion. CPM Braxis (Brazil), EPAM (Russia), eTelecare Global Solutions (the Philippines), Neusoft (China), and Softtek (Mexico) are the leading suppliers with roots in countries other than India. Although these new players have established the local advantage and credibility, they lack the depth and the breadth that India-based firms and the multinationals bring to the table.

2.2.4 Services offered by the IT outsourcing firms:

The early days of the industry were focused on services that were simple and that could be executed offshore with little involvement from the client side. What started as a cost reduction measure has now grown into a much wider array of services, including ERP implementation, Help Desk support, Remote Infrastructure (server) management to name a few.

The contract between ABB and IBM illustrates this growth in relationship and services offering maturity. IBM's offering evolved from being a low tech, cost reduction service to a multi-year, multi-billion partnership. In July 2003, Asea Brown Boveri (ABB) and IBM

announced a 10-year, \$1.1 billion contract [13] covering almost 90 percent of worldwide ABB IT infrastructure operations. The deal included the management of servers, operating systems, corporate networks, personal computers and help desks in 14 countries in Europe and North America.

2.2.5 Current state of IT outsourcing industry:

Currently, most of the major service providers in this industry operate on a global scale.

Most of the service providers responded to:

1. Increasing cost and high turnover in the Indian labor market;
2. Clients' desire to have service availability in the same time zone for mission-critical applications;
3. Positioning of other countries, such as those in Latin America, as viable alternatives to India; and
4. Their own concerns about putting all their eggs in one geopolitical and labor-economic basket.

For example, TCS, the India-based IT outsourcing firm made the decision to move into Latin America about six years ago. By April 2008, TCS had 5,571 workers in Mexico, Argentina, Brazil, Chile, Colombia, Ecuador, and Uruguay [14]. Another example is Kimberly-Clark's decision to hire Cognizant Technology Solutions in Buenos Aires to handle tech support for its SAP software applications in the U.S [15]. Time zone compatibility was one of the important factors that influenced this decision.

2.2.6 Evolution path for IT outsourcing business:

We conclude this chapter by looking at the evolution of this industry from cost focus to the next levels such as quality focus and innovation focus. Michael R. Weeks and David Feeny very clearly describe this evolution in their article “*Outsourcing: FROM COST MANAGEMENT TO INNOVATION AND BUSINESS VALUE*” in California Management Review’s summer 2008 edition. Table 1 [16] below describes this evolution from the perspective of the stakeholders involved and the expected results in each stage.

Table 1 - Evolution path for IT Outsourcing - Adapted from Michael Weeks and David Feeny

TABLE I. Characteristics of the IT Outsourcing Learning Curve

	Cost Focus	Quality Focus	Innovation Focus
Client Concerns	IT as Commodity	IT Underpins Business Critical Activity	IT is Potential Enabler of New Business Value
Supplier Concerns	Contract Profitability	Platform Development	Partnership Development
Relationship Focus	Constant Negotiation	Best Practice IT	Exploration/Ideas
Target Outcomes	Cheaper IT	Better IT	Better Business

The left side represents the beginning stage of outsourcing. Clients were more focused on cost reduction. Quality of service suffered as a result of the providers competing on the basis of cost. There was mistrust between the clients and providers. Over a period of time, outsourcing firms invested heavily in improving their employees’ skill set by providing extensive technical training that rivals what is found in traditional university settings [17]. They also invested in improving internal processes and became certified in ISO 9001, CMM Level 5 and other quality and process maturity disciplines. For an example of a firm’s journey in improving its processes, Appendix A provides details on Cognizant’s process maturation.

Under concerted effort by the outsourcing vendors, the vendor-client relationship has been evolving to focus more heavily on quality. However, where the relationship is at any given

time: on left side focused on cost, in the middle focused on quality, or on the right focused on innovation; depends on when the relationship began, how mature is the relationship, what are the business and outsourcing strategies of the client and other factors. Clients that are looking for a long term partnership with these providers, and offering their entire IT infrastructure to the provider to manage; view this strategy as a means to focus on their core business. Dennis Haltinner, Senior Director of IT Strategy at Kimberly-Clark describes his firm's relationship with the IT outsourcing vendor Cognizant in this way, "Our client partner relationships are typically pretty deep. It's not like we just met each other and had coffee. Cognizant understood who we were and what we wanted to do. It's become a personal relationship" [18]. Such shift toward the right side of the chart does put the client at risk of complete dependency on one vendor, but such tradeoffs are inevitable as one moves from the cost focus to the core competency focus side.

Due to the growing demand for IT outsourcing, the major India-based providers have posted an average growth rate of over 40% from 2001 to 2006 [19]. Most of this growth has been organic. These firms have evolved from being India-centric to the current global development centers model, pursuing process standardization and establishing world-class quality processes at the same time. This kind of expansion on all fronts does put a strain on their ability to balance growth and quality. The magnitude of the challenge increases multi-fold when you move closer to the "Innovation Focus" side of the table described above. Now the IT outsourcing firm has to interact very closely with client's business managers. Complex IT projects that have business impact inevitably require such business manager participation from the clients. The communication and delivery expectation challenges between offshore resources and client business managers are not trivial. A 2007 study indicated that 34% of clients ended outsourcing

arrangements prematurely [20]. Although we can't directly correlate this failure to the shift to the right (the Innovation Focus), it seems like a plausible explanation, since by 2007 most of the major IT outsourcing firms seem to have mastered their offerings for the left side of the table regarding cost focus.

The current global economic downturn that is forcing clients to look for drastic cost reductions will put additional burden on the relationship if that relationship has already progressed towards the quality and innovation side. Outsourcing firms will need to find innovative ways to balance the increased pressure on cost reduction with the need to deliver quality services. Although these two aspects are not mutually exclusive, it is not an easy task by any stretch. In subsequent chapters of this thesis, we will study an innovation that one IT professional services firm, Cognizant, has developed and implemented firm-wide, to see if it addresses these challenges.

2.3 Summary:

In this chapter, we discussed what a PSF is, some of the well known types of PSFs, and how IT outsourcing firms are positioned between a “pure practice-based” firms and “pure product-based” firms. We then looked at the evolution of this industry from being cost-focused to quality- and innovation-focused. We saw some of the challenges associated with managing growth and moving towards higher quality at the same time.

In the next chapter, I will discuss, the major players involved, their market share, and, their business model. I will also discuss the future trends that might reshape this industry.

3. Market Analysis

3.1 Does IT matter?

Information Technology (IT) has become an important part of business. IT exists as a necessary tool (like email), a utility (Microsoft office tools), a strategic differentiator (the online ordering system for Dell Computers in the 1990s). Gartner predicts over \$3 trillion in global IT spending for the next several years. See table 2 [1] below for details.

Table 2 - Global IT spending forecast

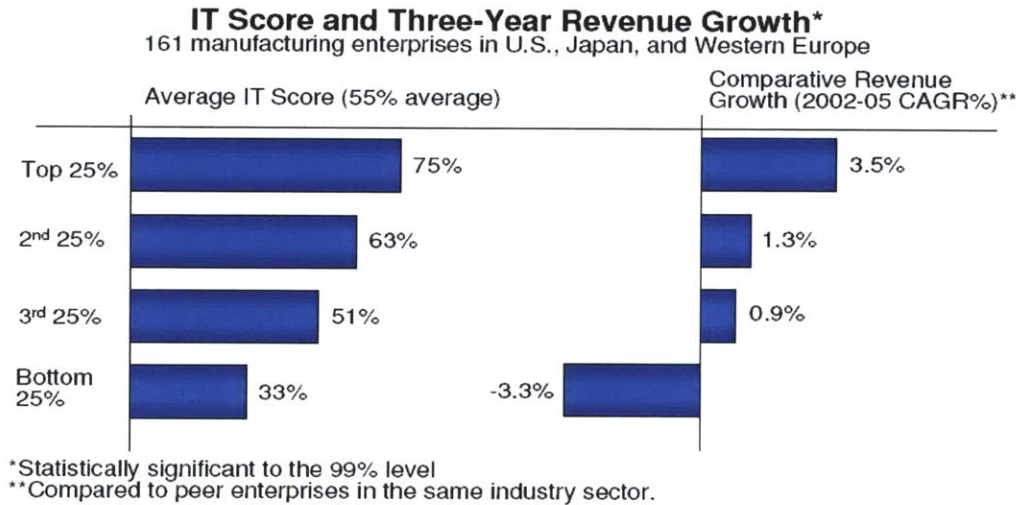
	2008	2009	2010	2011	2012	Five-Year CAGR (%)
Global IT Spending (4Q08 Update)	3,439,349	3,504,707	3,680,332	3,881,282	4,085,732	5.1
Annual Growth Rate (%)	7.5	2.2	5.0	5.5	5.3	-
Global IT Spending (1Q09 Update)	3,358,349	3,234,678	3,313,721	3,481,184	3,671,630	3.0
Annual Growth Rate (%)	6.0	-3.7	2.4	5.1	5.5	-

Note: Numbers shown are preliminary 1Q09 estimates.
Source: Gartner (March 2009)

Research [2] conducted by Prof. Marco Iansiti of Harvard Business School demonstrates the need for robust IT infrastructure to realize quantifiable business benefits. Of the 161 manufacturing firms studied, firms in the top quartile of IT capability enjoyed a 23 percent advantage in revenue per employee compared with firms in the bottom quartile of IT capability. The analysis shows that the primary driver of this difference is superior IT infrastructure in the form of an optimized combination of access, security, maintenance, backup/recovery, and messaging systems. Figure 1 shows the results of the study Prof. Marco Iansiti conducted about the correlation between IT capabilities and business performance.

Figure 1 - Correlation between IT Capabilities and Business Performance - Adapted from Enterprise IT Capabilities and Business Performance - 2006

Figure 1. Correlation Between IT Capabilities and Business Performance

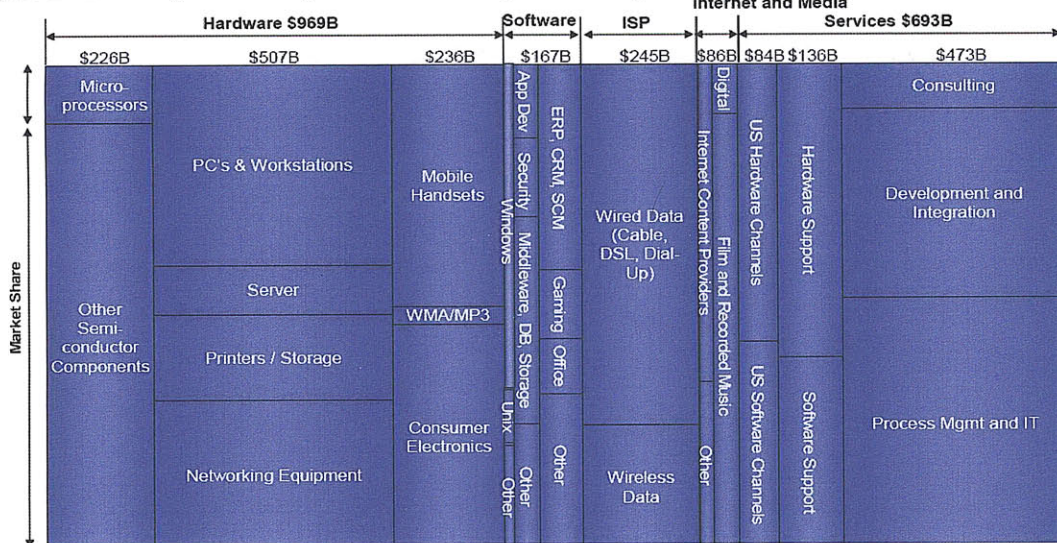


It is no surprise many firms are investing heavily [3] in improving their IT infrastructure. In the next section I will explore how much of that is being spent on outsourcing of IT and who the major players are.

3.2 IT ecosystem:

We understand the need for IT spending and we saw overall how much firms are spending on IT. Let us now review the IT ecosystem (Network of organizations that drives the creation and delivery of information technology products and services [4]) to see where the IT outsourcing industry falls in the value-chain to get an understanding of the size of this market. Following figure [5] shows the core domains (a domain is a specific group of organizations in an ecosystem that shares common characteristics and solves similar problems for its customers [6]) of the IT ecosystem.

Figure 2 - IT Ecosystem - adapted from “Enterprise IT Capabilities and Business Performance” - 2006



For the purpose of this thesis, I will be focusing on the right most side of the ecosystem under Services. It is worth mentioning that even though the ecosystem diagram above shows clear boundaries, that is not the case for some segments. SAP, a predominantly software product company, has a consulting division that helps clients with business process mapping and software implementation, IBM not only has a global IT consulting division but also has several major software and hardware products.

Strategy Consulting firms such as McKinsey, and Boston Consulting Group (BCG), have also become part of this ecosystem. These consulting firms realized the need for integrating IT into their strategy work as IT became an integral part of the business fabric for most organizations. These consulting firms do not take up the IT product or service implementation work for two reasons. First, it is not their core business, and second, they want to maintain an unbiased and objective viewpoint while assessing and recommending IT solutions to their clients.

Other players in this domain are the IT consulting firms, including the Global Services Delivery division of IBM, Deloitte Consulting, and Accenture. These firms have a wide array of

software products/services and are focused on providing IT consulting and implementation services. This is where we start to move away from the pure “practice-based” firms (such as Strategy Consulting) to a practice and product mix firms.

Major players in the IT outsourcing business are the India-based TCS, Infosys, Wipro, Cognizant, and HCL; along with the U.S-based IBM, EDS, and Accenture. Typical services include Help Desk, Business Process Outsourcing (BPO), Infrastructure support (server maintenance), Custom IT application development, and Packaged product implementation. See Appendix C for a complete list of services offered by TCS, one of the market leaders.

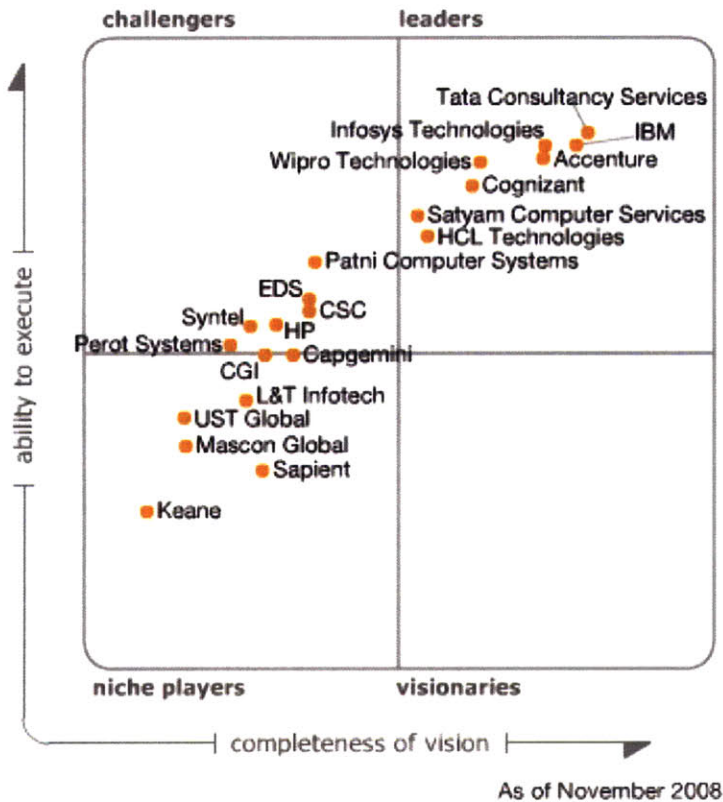
Gartner forecasts that worldwide core IT Outsourcing will grow from \$201 billion in 2007 to \$285 billion in 2012, which represents a five-year compound annual growth rate of 7.2% [7].

The next section will describe who the major players are that will be competing for this \$201 billion. This section will explain their relative competitive position and the challenges they face going forward.

3.3 Service Providers:

The following figure (Gartner’s Magic Quadrant for 2008) shows the major firms providing offshore application services (focused on North America-based clients). As can be seen, the “leaders” are TCS, IBM, Wipro, Infosys, Satyam [8], HCL, Accenture, and Cognizant.

Figure 3 - Gartner's Magic Quadrant [9]
Figure 1. Magic Quadrant for North American Offshore Application Services



Gartner includes firms in the analysis based on certain quantitative criteria such as revenue, and certain qualitative criteria such as processes, systems, and methods. Then these firms are evaluated based on different attributes that measure firm’s ability to execute and firm’s completeness of vision. These attributes have different weightings. Based on the score, firms are then categorized as Leaders, Challengers etc. According to Gartner, Leaders are those that are

performing well, have a clear vision of market direction and are actively building competencies to sustain their leadership positions. For a more detailed description and definition of the terms and criteria, please refer to *Appendix B* for Gartner's Magic Quadrant details.

As we can see, "Leaders" in this industry are one step ahead of their competitors and they are highly competitive. They are in this leadership position not just by revenue, they are leaders based on a comprehensive set of criteria. Refer to *Appendix B* for details on Gartner's Magic Quadrant classification process. However, it is important for any firm engaged in the IT outsourcing business to pay attention to not only these leaders but also the challengers and niche players when evaluating their strategies and innovations, since it is conceivable that a niche player might develop an innovation that would change the competitive landscape.

The next section will look at the industries these vendors support, the types of services they offer and the type of delivery model they employ.

3.4 Business models

Most of the major vendors have evolved towards a similar business model; one structured around industry verticals (such as, Finance, Manufacturing, Retail, Government, Health care) with breadth in many functional areas (Packaged product implementation, Custom application development, Testing services, Remote Infrastructure Monitoring, BPO, and so on). To get an idea of the types of industry verticals supported, and the types of services offered by a typical global IT outsourcing firm, refer to *Appendix C* for a complete list of Industry verticals supported by TCS and refer to *Appendix D* for a complete list of services offered by TCS.

The earlier delivery models of on-site, offshore, or a combination of the two have all evolved into the current Global Delivery Model (GDM) for the major players in this industry. A

GDM encompasses the assets and competencies of a service provider (internal or external) applied to delivering services using a combination of domestic and offshore service locations and resources. Assets and competencies include investments in IT skills and labor resources, tools, policies and procedures, methodologies, infrastructure, management, HR functions, and delivery processes [10]. GDM offers an optimal combination of processes, end-to end methodologies and quality procedures (with high-quality skills and resources available internally or externally in requisite quantities on a global basis) that enable organizations to maximize the quality of their solutions, and minimize the overall cost and delivery time of their IT services [11]. According to Gartner, service providers with concerted investments in strategically building out a multi-country, globally integrated delivery model will dominate in the future [12].

Thus, by evolving their delivery model and internal processes, these major outsourcing vendors have prepared themselves for the current market where IT Outsourcing is not a quick fix for clients. Following a decision to outsource, an agreement typically requires three to nine months of negotiation and six to 18 months of transitioning before actually realizing the objectives for both parties [13]. Major Outsourcing firms usually engage in multi-million/billion dollar, multi-year contracts with clients to provide array of services. The largest deal for 2008 was for \$2.5 billion for 9.5 years and was awarded to TCS [14]. See *Appendix E* for the details of average deal size and average length of contract for year 2008. The business model has evolved from a cost-driven hourly billing rate to one of strategic importance.

Now that we have a general overview of this market and the major players, let's look at where this industry is headed and what are the major challenges these firms face. The discussion of innovation in the subsequent chapters will review the innovation under study in this thesis in

light of these challenges to see whether C2, as the innovation is known, is addressing these challenges for Cognizant.

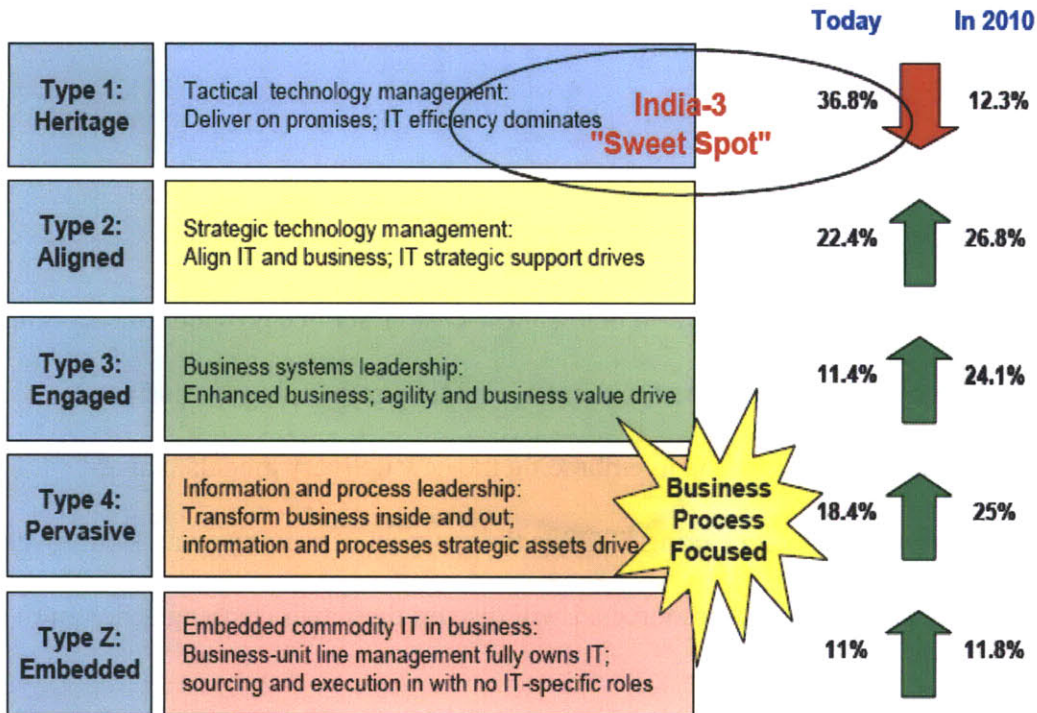
3.5 Future trends:

IT outsourcing firms in general face two major challenges going forward. One is the imperative to move up the value chain—from being a low cost IT service provider to becoming a trusted partner in shaping the IT landscape for clients—and thus embedding themselves in clients' business. The second challenge is in embracing the new delivery models that are industrializing the current offerings; offering IT PSFs the prospect of moving away from revenue growth's linear dependency on human resources. I will discuss these two challenges in more detail in the sections below.

The figure [15] below describes what role IT organizations are playing today in organizations and predicts what role IT organizations will play in the coming years. The figure describes the type of IT service and the percentage allocation of the total IT budget. The figure shows the difference in these allocations between now and year 2010. For example, investment in IT services that serve Type 3 needs will increase from the current 11.4% to 24.1% by year 2010.

Figure 4 - Future business challenges

Figure 2. The Role of the IT Organization in Enterprises Is Changing and Will Have a "Service" Effect



Although this report is in the context of predicting whether or not the top three India-based firms (“India-3”: TCS, Infosys, and Wipro) will achieve “mega vendor” status, it can be argued that the challenges this picture describes are applicable to most of the major players in the IT outsourcing business. For example, Cognizant, at close to \$3 billion in revenue is not far behind Wipro, which is at \$3.3 billion. Refer *Appendix F* to understand the factors considered in designating a mega vendor.

The IT organization’s shifting role in enterprises (as described in the figure above, from Type 1 to Types 2, 3, 4 and so on) is likely to impact firms engaged in the IT services business. The outsourcing firms will need to reposition themselves for the new opportunities by either developing the required competencies internally or acquiring them from outside. Innovation will play a key role in building capabilities that can meet future challenges.

Let's look at these types a little more closely. Type 1 (Heritage) describes the low tech, tactical services where efficiency matters. Many organizations (clients) report this is how they are using IT, to run business. This segment is expected to shrink from its current size of 36.8% to 12.3% of the outsourcing market. It is important these vendors take proactive steps to either get rid of assets that were only useful for this type of service or reposition them to make them useful for other types. Types 2, 3, 4, etc are more focused on improving client's business performance through IT.

According to Gartner, the U.S based firms are well positioned to transition from Type 1 to the other types. However, it is not going to be easy for India-based firms, because bulk of the services being provided by India-3 (again, I would argue that other major vendors such as Cognizant and HCL are also in the same boat) happens to be of Type 1. This repositioning for other types (Type 2, 3, 4 etc) may mean less emphasis on low skilled technical workers, and more emphasis on developing deeper industry expertise and best-practices; and leveraging IT to transform business for the clients. Refer to *Appendix G* on mega vendor data. It provides earnings per employee comparisons between U.S-based firms such IBM and Accenture (mega vendors), and India-based firms, including TCS and Infosys. For example, revenue per employee for IBM is \$146,910, versus \$45,800 for Infosys.

To compete on the same basis as U.S. firms, India-based firms will need to move up the value chain to higher-value, more strategic projects. They will need to develop increasingly close relations with the business leaders at client firms to seek, acquire, and deliver on these strategic projects. This is not an easy transition for these firms, as their focus and core value proposition is based on their technical skills base and strength. Moving toward a business process-driven value proposition is not a trivial task. This transition requires strong relationships with business

stakeholders. Cultural and time zone issues will affect India-based outsourcing firms' ability to develop this trust among business executives. As a case in point, Infosys started their Business Consulting division back in April 2004 and the division had a \$10 million loss in year ending March 2008 (Infosys had approximately \$1 billion in profits that year [16]).

The second challenge concerns the commoditization of services. The acceptance of new delivery models [17] that allow organizations to access services based on a per-user per-month (PUPM) or per-unit per-month basis will force all types of service providers, including traditional outsourcers, to move toward the new pricing model. As more new services-based on Alternative Delivery Models (ADM) are created and delivered to the market on a PUPM basis, an increasing number of client organizations will adopt these new IT value propositions. A strong benefit to clients is that they shift risk and fixed costs to the providers, thus saving client enterprises time and money by aligning their technology infrastructures to vendors' industrialized services models. In fact, per Gartner, the biggest competitive threat to the current people-centric outsourcing model is the maturing of automation [18] in the next five to seven years.

3.6 Summary:

In this chapter, we expanded upon the previous chapter and looked in more depth at the major players in this business, their business models and what the future trends indicate. The purpose of this discussion was to make the reader aware of the market place, the major players and the challenges they face. Going deep into analyzing these challenges and coming up with recommendations is out of scope of this thesis report. However, analyzing the thesis study innovation in light of these challenges is in scope. In the next chapter, I will present the

framework that I have developed to analyze innovations in the knowledge management area for PSFs engaged in the IT outsourcing business.

4. Analysis Framework

4.1 Introduction:

This analysis framework is targeted toward innovations at PSFs that are in the business of providing outsourced IT services. The framework specifically analyzes innovations addressing the problem space “Effective Knowledge Management” as it relates to the IT outsourcing industry.

The analysis framework has three components:

Definition criteria are applied to investigate: a) What issue the innovation is trying to solve; b) What is innovation; c) What type of innovation is this (Incremental, Radical etc.); d) What is the process of innovation (Orchestra, Jam session, Creative Bazaar etc), and e) Are the firm and its employees ready organizationally and culturally for fostering this kind of innovation?

An **Alignment test** is used to determine whether this innovation is right for, or “aligned with”, this firm. Alignment with key stakeholders (employees and clients) is also evaluated.

A **scan for Market fit** explores what is going on in the IT outsourcing industry and elsewhere to seek relevance for this innovation. This section also reviews the sustainability of this innovation in the face of uncertainties in external factors such as economy, politics, and regulations.

4.2 Definition criteria:

4.2.1 Problem statement and problem description:

We need to evaluate the innovation in light of the need for it in the firm and the marketplace. Here we define the problem the innovation is trying to solve and describe the problem space.

As described in the earlier chapters, human resources are the most important assets for PSFs. The knowledge these resources possess prior to joining the firm and acquire while working at the firm on complex client problems is a critical asset for the firm. Knowledge management is the process by which the knowledge and capabilities of individuals become the knowledge and capabilities of the firm. Effective knowledge management: a) rapidly builds individual and firm level capabilities; b) helps to create a “learning organization”; and c) can be a key source of competitive advantage [1].

However, there are challenges in implementing “Effective knowledge management” at the firm level. Some of them are:

Type of knowledge – By the very nature of PSFs, a big component of knowledge is tacit in nature, rather than formal, which makes it hard to codify and transfer from one individual to another.

Type of interaction – Informal sharing of knowledge via water cooler discussions or hallway conversations is dependent on an individual’s personal network, which makes it unsuitable for large scale knowledge diffusion. Finding the right person at the right time among a geographically dispersed group of 50,000 employees or more is virtually impossible with an informal or personal network.

Culture of the organization – The competitive work environment, emphasis on billable hours, proprietary knowledge, and lack of incentives for knowledge sharing potentially add to the problem. If the firm grew by mergers and acquisitions and did not reconcile the cultural differences between the different organizations, that would exacerbate the problem of intra-organizational knowledge-sharing [2].

Barriers to communication – Geographical separation, time zone difference, cultural differences among employees and/or clients due to ethnicity, race, and gender, lack of tools for easy communication (paper copies of documents, for example) worsen the problem.

In most PSFs (and in most companies) this process is poorly managed and is largely an IT exercise [3].

4.2.2 General definition of Innovation:

Innovation is the intersection of invention and insight, leading to the creation of social and economic value [4]. The innovation process begins with curiosity-driven research, and then moves through the development of applications that are commercialized, creating new businesses and new jobs [5].

The term **innovation** means a new way of doing something [6]. It may refer to incremental, radical, and revolutionary changes in thinking, products, processes, or organizations. A distinction is typically made between invention, an idea made manifest; and innovation, ideas applied successfully.

Once an innovation occurs, it may be spread from the innovator to other individuals and groups. It has been proposed that the life cycle of innovations can be described using the ‘S-curve’ or diffusion curve [7].

Figure 5 – S-Curve - Adapted from Wikipedia.org

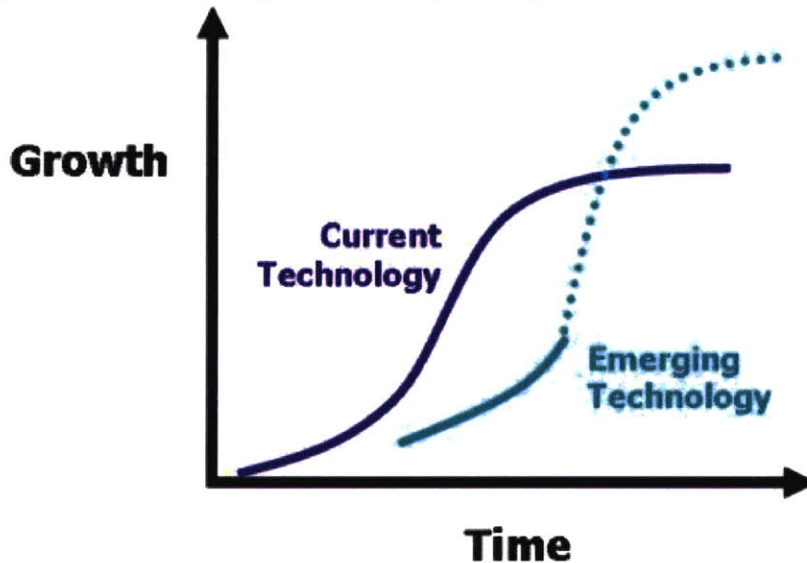


Figure 5 above shows the S-curve mapping growth of revenue against time. In the early stages of a particular innovation, growth is relatively slow as the new product establishes itself. At some point, customers begin to demand it, and the product’s growth increases more rapidly. New incremental innovations or changes to the product allow growth to continue. Towards the end of its life cycle, growth slows and may even begin to decline. In the later stages, no amount of new investment in that product will yield a normal rate of return.

Successive S-curves will come along to replace older ones and continue to drive growth upwards. In the figure above the first curve shows a current technology. The second shows an emerging technology that currently yields lower growth but will eventually overtake current technology and lead to even greater levels of growth.

4.2.3 Type of Innovation:

We then analyze the innovation to determine in what category we can place this innovation. The innovation will be categorized using the Innovation Quadrant developed by Rebecca Henderson, Professor at Sloan School of Management at MIT and Kim Clark, Professor at Harvard University.

“A component is defined as a physically distinct portion of the product that embodies a core design concept and performs a well-defined function. The product as a system is not just a set of components. It serves a specific function due to the interconnectedness of the components. This concept requires two types of knowledge. First, it requires component knowledge – core design concepts and the way in which they are implemented in a particular component. Second, it requires architectural knowledge or knowledge about the ways in which the components are integrated and linked together into a coherent whole.” [8]

Figure 6 - Architectural innovation framework (adapted from Henderson and Clark 1990).

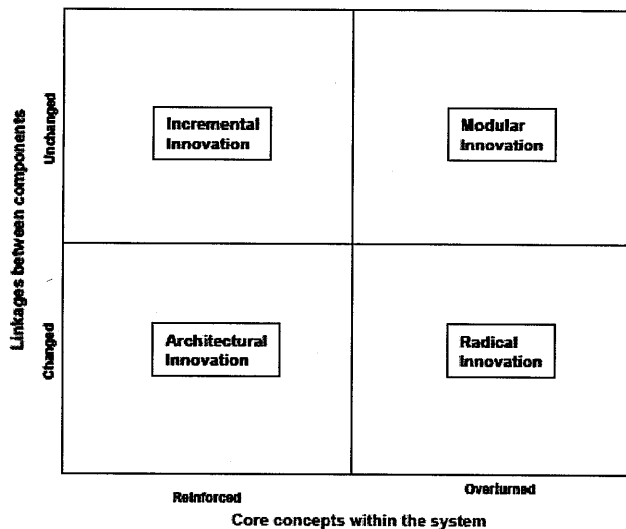


Figure 6 above shows different types of innovation. The horizontal dimension captures an innovation’s impact on components, while the vertical dimension captures its impact on the linkages between components. This framework for analyzing innovation is useful because it

focuses on the impact of an innovation on the usefulness of the existing architectural and component knowledge of the firm.

4.2.3.1 Incremental Innovation:

Incremental Innovation refines and extends an established design. Improvement occurs in individual components, but the underlying core design concepts, and the links between them, remain the same.

4.2.3.2 Modular Innovation:

If a component can be replaced with another component (probably made/implemented with different material/technology) then it is an innovation that changes a core design concept, without changing the product's architecture.

4.2.3.3 Architectural Innovation:

Innovations that change the way in which the components of a product are linked together, while leaving the core design concepts (and thus the basic knowledge underlying the components) untouched. It destroys the usefulness of a firm's architectural knowledge but preserves the usefulness of its knowledge about product's components.

4.2.3.4 Radical Innovation:

Radical Innovation establishes a new dominant design, and hence a new set of core design concepts embodied in components that are linked together in a new architecture.

From the analysis point of view, we will review the innovation with respect to these categories and make inferences about what kind of challenge such an innovation might pose to the firm.

4.2.4 Process of Innovation:

Here I will explore the role of user participation in defining and shaping the innovation based on the research work of Prof. Eric Von Hippel of MIT, and then I will discuss the process of innovation and model it along the lines of the music industry models described in the book The Global Brain by Satish Nambisan and Mohanbir Sawhney.

4.2.4.1 User participation:

Traditionally, products and services are developed by manufacturers in a closed way, the manufacturers using patents, copyrights, and other protections to prevent imitators from freely benefitting from their innovation investments. In this traditional model, a user's only role is to have needs, which manufacturers then identify and fill by designing and producing new products. The manufacturer-centric model does fit some fields and conditions [9]. Innovation has been defined historically by the process of invention and discovery, and driven by investment in Research & Development (R&D). This approach epitomized the innovation engine of the 20th century.

Over the past decade, however, the proliferation of communication networks has not only connected people, places and ideas in unprecedented ways, but also catalyzed the evolution of social structures. With the freedom to transcend physical and geographic borders more easily, we are more willing to partner inside and outside our traditional boundaries of organizations and countries [10].

A growing body of empirical work shows that users are the first to develop many and perhaps most new industrial and consumer products. As seen in Figure 7 below, the increased

concentration of innovations toward the right indicates that the likelihood of innovating is higher for users having higher lead user index values [11]. The rise in average innovation attractiveness as one moves from left to right indicates that innovations developed by lead users tend to be more commercially attractive.

Figure 7 - User participation in Innovations - (adapted from Eric Von Hippel 2003)

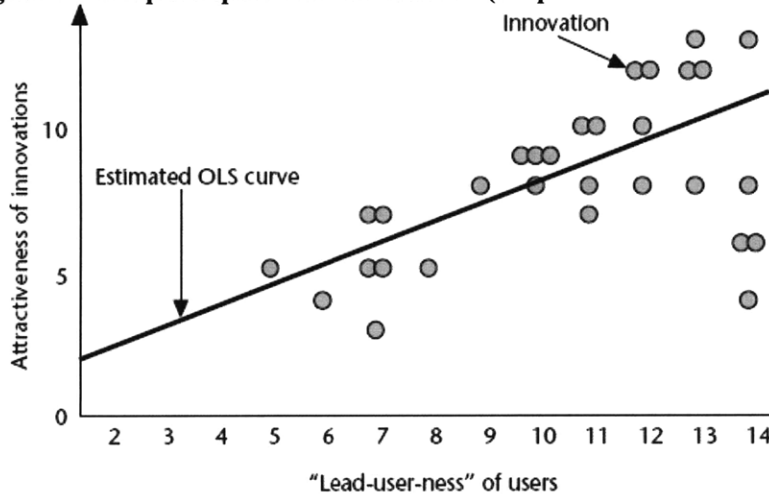


Figure 1.1

User-innovators with stronger “lead user” characteristics develop innovations having higher appeal in the general marketplace. Estimated OLS function: $Y = 2.06 + 0.57x$, where Y represents attractiveness of innovation and x represents lead-user-ness of respondent. Adjusted $R^2 = 0.281$; $p = 0.002$; $n = 30$. Source of data: Franke and von Hippel 2003.

Eric Von Hippel, Professor at MIT’s Sloan School of Management and author of Democratizing Innovation, conducted extensive study of user-centric innovation. He quotes open source software and Wikipedia as some of the great examples of user-based innovations. Open source software has emerged as a major cultural and economic phenomenon [12]. The number of open source software projects has been growing rapidly. As of January 2009, Sourceforge.net, a single major infrastructure provider and repository for open source software projects, hosted 230,000 projects and has over 2 million registered users [13].

Another classic example is the Apache Web Server. Apache’s development and user

community-based refinement dates back to 1994. After many modifications and improvements contributed by many users, Apache became the most popular web server software on the Internet, garnering many industry awards for excellence. Despite strong competition from commercial software developers such as Microsoft and Google, the Apache web server holds the #1 position and is used by over 46% of the 225 million websites [14].

The nature of innovation is changing. It is no longer the domain of the sole inventor, laboring for years in isolation. It is multidisciplinary, it is collaborative, and it is user-based. It is dependent on shared knowledge, standards, and collaboration [15].

4.2.4.2 Modeling the process of innovation:

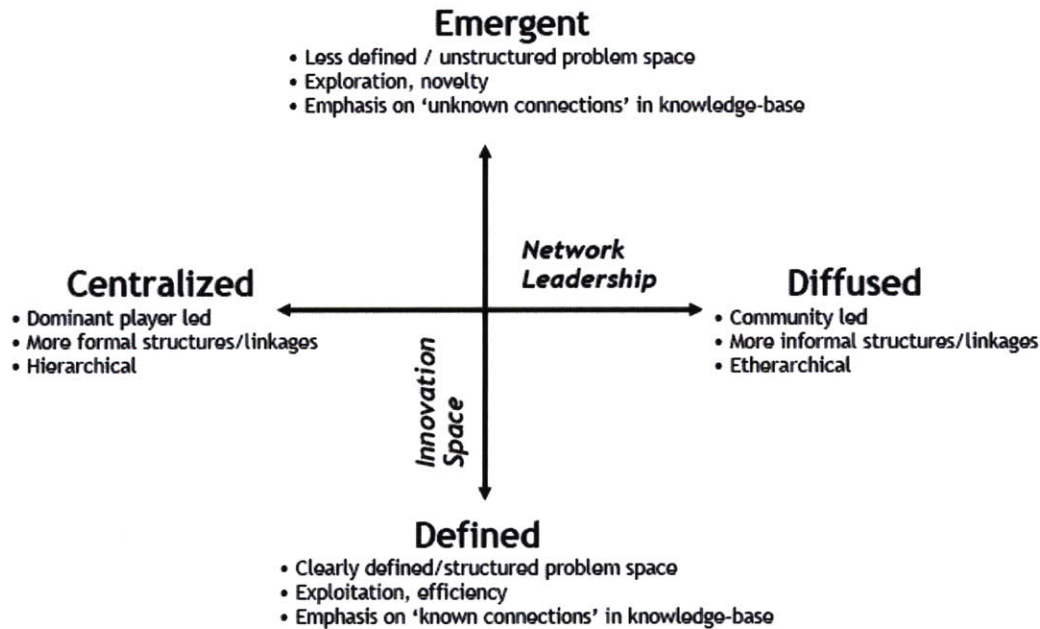
Given our focus on innovations addressing the knowledge management issue in PSFs where individual users are the source of this knowledge; my hypothesis is that individual users and user communities play a significant role in the development and diffusion of any innovation that addresses knowledge management in PSFs. The follow-on question then is, what kind of participation will these users have in shaping this innovation? The following section describes the types of user and network/community participation in innovations.

Satish Nambisan and Mohan Sahwney in their book The Global Brain, define network-centric-innovation as an externally-focused (as opposed to firm-centric) approach to innovation that relies on harnessing the resources and capabilities of external networks and communities (grid computing in the field of computer science, the open source software community etc) to amplify or enhance innovation reach, accelerate innovation speed, and enhance the quality of innovation outcomes.

They describe two key dimensions in organizing innovative efforts. One is the nature of innovation or Innovation Space, and the other is the nature of network leadership. See Figure 8 [16] below.

Figure 8 - Dimensions of Network-centric Innovations - (adapted from The Global Brain 2008)

Understanding the landscape



4.2.4.2.1 Innovation Space:

Different types of innovations can be pursued collaboratively in innovation networks. Some involve making well-defined modifications to existing products or services. Some are not as clear. This clarity of the innovation can be represented along the Innovation Space as a continuum ranging from “defined” to “emergent”. The book gives the customer engagement process to improve existing products at Ducati as an example for the “defined” space. It is “defined” because the innovation has to work within the boundaries set by the existing product, the motorcycle in this case. However, there is more freedom in the “emergent” case. Another example from the book for the “emergent” case is the “idea sourcing” process used by Staples

for new products in the office supplies market. The general public is free to explore ideas as long as the innovation results in either a new product or in improvement to an existing product, related to office supplies.

4.2.4.2.2 Network Leadership:

Satish Nambisan and Mohanbir Sawhney explain the concept of network leadership as follows:

“An innovation network consists of a set of independent actors with varying goals and aspirations, diverse resources and capabilities, and different business models. The mechanism or the governance in place to ensure some coherence among the participants’ activities, capabilities, and aspirations is called Network Leadership. Network Leadership can be thought of as a continuum of centralization, with the two ends being “*centralized*” versus “*diffused*”.

At the centralized end of the continuum, the network is led by a dominant firm that leads the network. Leadership may be exercised in different ways – envisioning and establishing the innovation architecture, making the critical decisions that affect or shape the nature and the process of innovation, and defining the nature and membership of the network itself. A good example is, in its technology ecosystem, salesforce.com provides the leadership by establishing and promoting the technology platform and by facilitating the activities of its external developers. At the other end (diffused), we find the leadership to be loosely distributed among the members of the network. All members of the network share responsibility for leading the network. Many open source software projects (Linux development, for example) fall in this category.

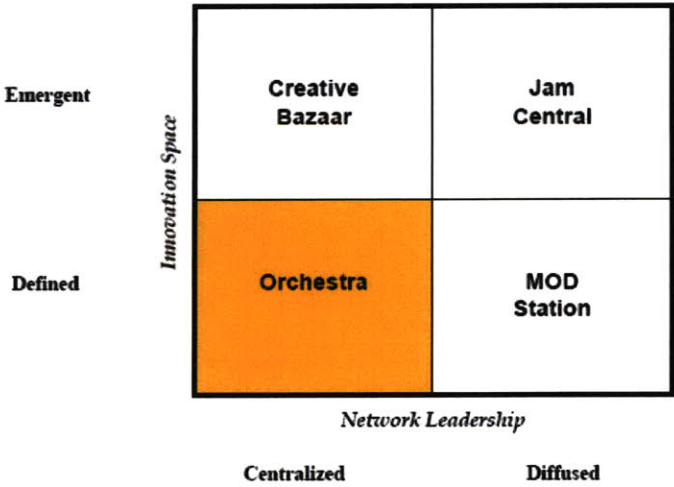
As we move from left to the right on the continuum of Network Leadership, we think about innovation networks that have a clearly defined core with a single dominant firm to

networks where the core and periphery are less well defined or where the core consists of all or most of the members. For example, at the extreme left, we might consider networks such as Microsoft .NET where a single firm forms the core of the network, provides leadership, and makes all the key innovation decisions. As we move toward the center, we think of networks such IBM’s Power chip innovation alliance (www.power.org), wherein IBM forms the core of the network but shares more decision-making rights with other members of the network. As we go further to the right, the core might consist of more than one member, and at the extreme, the core might include most or even all members of the network.”

4.2.4.2.3 The different models:

The two dimensions – Innovation Space and Network Leadership – when crossed together, define four archetypal models that help structure the landscape of network-centric innovation. Figure 9 [17] below shows the four models of network-centric innovation.

Figure 9 - Innovation Models - (adapted from The Global Brain 2008)



4.2.4.2.3.1 The Orchestra model:

The Orchestra model closely resembles the organization and structure of a typical symphony orchestra. The firm or its product/platform is the center of control with other pre-selected parties contributing within the framework the firm provides just as a conductor would with his/her pre-selected artists. The model is focused on exploiting the market opportunities based on an explicit innovation architecture that is defined and shaped by a dominant firm. The innovation architecture typically emphasizes efficiency over novelty. Innovation process is highly organized and coordinated (just as in an orchestra).

Boeing's 787 Dreamliner (considered a game changer by Boeing's leadership) is an example of this kind of innovation in the aircraft industry. Here, Boeing acted as the dominant firm (the Conductor of the Orchestra), provided the main design for 787, and got a committed network of handpicked contractors who would each design and build individual parts of the aircraft like a disciplined artist performing on a particular instrument as part of the orchestral performance, always within the boundaries defined by the conductor. Boeing would act as the integrator in the end. This approach is different from the traditional "build to print" outsourcing model where Boeing would do all the design and the vendors would just manufacture the parts to exact specifications. Here, Boeing is allowing its partners to **design** and build their parts, but within a well-defined framework.

4.2.4.2.3.2 The Creative Bazaar model:

This model is analogous to the music production industry in that a music production firm specializing in, for example, country music seeks recordings from upcoming artists, screens them and picks a few that it thinks have the potential to be hits in their market. This model is focused on seeking out and bringing to fruition new innovation opportunities that meet the broad market and innovation agenda of the dominant firm.

This model describes a context wherein a dominant firm shops for innovation in a global bazaar (marketplace) of new ideas, products, and technologies; and uses its proprietary commercialization infrastructure to build on the ideas and make them market-ready. The commercialization infrastructure might include design capabilities, brands, capital, and access to distribution channels.

Proctor & Gamble (P&G) is a great example for this model. P&G sources relatively undeveloped ideas/products through their Connect+Develop initiative. P&G invites individual inventors to submit patented product or technology ideas that can potentially be commercialized by the company. They claim that 50% of their innovation comes from the community.

4.2.4.2.3.3 Jam Central model:

This model is similar to musical jam sessions in that there is no single conductor. People with skills in different musical instruments come together and perform to make coherent music. The model focuses on exploring novel market/ technological problems. Members of the community together frame the broad parameters of the problem space. Found in markets where complex and a diverse set of knowledge elements have to be brought to bear to solve novel & ill-defined problems.

Apache web server development (described above in this chapter) is a strong example of the Jam Central model of innovation. The web-based infrastructure at Apache.org supports the collaborative process and enables the community members to come together and contribute (as in a musical jam session) to the various individual projects. Further, all the output from the community's innovation efforts is made available in the public domain under the open Apache license, benefiting the broader community. There is no one central user or a firm that dictates terms of the process or output. The group as a whole gravitates towards a process and solution it feels is appropriate.

4.2.4.2.3.4 The MOD station model:

This model focuses on exploiting the knowledge of a community of 'experts' to address market prospects and technological issues within a predefined problem space. In this model, a community of innovators comes together to create new offerings by "modifying" existing innovations in ways that benefit all members of the network including the creator of the innovation.

The recent Mashup movement is a good example of the MOD station model. Creative and independent developers mix and match data and presentation elements from multiple web information sources (Yahoo, Google Maps, Zillow) to offer new and innovative web services.

4.2.5 Readiness for innovation:

Lastly, we look for similar innovation elsewhere to see if this innovation is unique to this industry, or this has happened in some form in another industry, and is being adopted here. Review would include exploration of other types of professional services firms (strategy, accounting, law etc) to see if any knowledge management innovation that already existed in those industries is being diffused into this industry.

4.2.5.1 Examples of organizational readiness for innovation:

Analysis would include what cultural-, organizational-, business model-, and global-enabling factors might be needed to foster this innovation in the IT outsourcing industry. The following two examples below underscore the importance of these factors for the success or failure of such an innovation.

4.2.5.1.1 Notes implementation in 1991:

The first known example occurred in 1991. At that time, when the Internet and global collaboration (at least in the information technology world) was in its nascent stage, a technology firm experimented with Lotus Notes, a Groupware technology for knowledge management within a firm [18]. “Notes” is an application development environment that can support communication, coordination, and collaboration within groups or organizations. While some features such as electronic mail are built-in, others need to be built by the adopting organization, e.g. discussion forums and customized views of shared databases. The result was anything but successful. Several reasons can be attributed to the failure of the implementation back in 1991.

- i. Although the tool is meant for knowledge-sharing among employees, it was implemented from a top-down approach, with the CIO declaring that the firm will use this tool, not giving much thought to the need for buy-in from employees
- ii. Lack of understanding and knowledge about the tool among employees engendered skepticism, and resistance to using the tool
- iii. Lack of adequate training, coupled with excessive focus on the technicality of using the tool undermined the collaborative nature of the tool and the potential business value.
- iv. It also worked differently from other tools available at the time, so its novel user interface and behavior were a turnoff to many users.
- v. Portrayal of the tool as an incremental benefit instead of a transformational one diminished its usage potential.
- vi. Misalignment of structural elements with the innovation – There was no reward system implemented to learn and contribute to the tool. Employees perceived extensive use of Notes as potentially disrupting the balance between billable hours and personal time. No clear policies on the content and format of the information sharing made the employees worry about getting in trouble. The firm's culture fostered a competitive environment which was not conducive to leveraging the collaborative nature of the tool.

The researchers mention that a major premise underlying groupware is the coordination of activities and people across time and space. For many users, such a premise in 1991 represented a radically different understanding of technology than they had experienced before. This suggests that a particularly central aspect of implementing a collaborative knowledge management tool is ensuring that prospective users have an appropriate understanding of the

technology. That is, that their technological frames reflect a perception of the technology as a collective, rather than a personal tool.

This research study suggests that in the early adoption of a technology, cognitive and structural elements play an important role in influencing how people think about and assess the value of the technology. And these significantly influence how they choose to use the technology. When an organization deploys a new technology with an intent to make substantial changes in business processes, people's technological frames and the organization's work practices will likely require substantial change. The research identifies an interesting issue raised by this requirement, and that is, how to anticipate the required structural and cognitive changes when the technology is brand new.

It is my hypothesis that the current employees of IT outsourcing firms are pretty savvy about using such collaborative tools in their personal lives, and transitioning that mindset to work-related collaboration won't be as difficult as it was in the era of Lotus Notes, when the home-based analogue didn't exist as a stimulus to workplace innovation. Another hypothesis is that a successful diffusion of the innovation would occur if conducted first in a pilot environment, followed by a firm-wide implementation after understanding the capabilities, cultural impacts and impact on existing work habits, and other implications of the tool and its technology.

4.2.5.1.2 Online collaboration tool (WeberWorks) at Weber Shandwick:

A second example in our discussion about the factors that influence the success or failure of an innovation is more recent and has a positive outcome. Weber Shandwick is one of the largest global public relations firms (part of the Interpublic Group, a \$6.5 billion dollar advertising and marketing services company). They developed a web-based collaboration tool for their Client Relationship Leader program back in 2003. By 2007, WeberWorks, as it was called, had evolved into a sophisticated online accounts management tool. WeberWorks 3.0 has three main components: 1) general collaboration tools (share project work, documents, images, and calendar); 2) constituency management tools (contact, outreach, and meeting); and 3) measurement tools (analysis and dashboard capabilities, access to external databases such as Factiva). According to users, the tool is easy to customize and use. It is extensively used by both Weber Shandwick employees, and clients [19].

Achieving innovation within outsourcing depends on certain attributes of the client and the supplier; and in the relationship between them. A key requirement for the supplier is that the supplier must be prepared to invest in business process design skills beyond its IT core, and in fact the supplier can bring added innovation potential if it has in-depth involvement in the industry sector(s) of its client. The key new requirement of the client/supplier relationship is that it should develop the levels of trust that are easy to achieve internally within each organization but hard to achieve between a client and vendor [20]. This leads to my next hypothesis: any innovation that addresses the knowledge management issue for the IT outsourcing firm has to include its clients in the process of development and diffusion of this innovation, such that clients share in the benefits of this innovation.

4.3 Alignment fit:

Any innovation a firm wants to pursue needs to take into account how the innovation promotes the firm strategy, how it impacts its most important resources—its people, and its clients. I will illustrate the alignment need in the next paragraph followed by investigation of alignment of innovation with these three important constituencies.

Firms develop strategies based on expected outcomes and then consistently pursue that strategy. In the India-offshore, IT outsourcing world, TCS strives to be the low cost provider, Infosys is known to be the innovator, and Cognizant pursues a “client-centricity” [21] strategy. Each strategy calls for a plan and action that promotes that strategy. For example, if TCS was to invest in an innovation, then that innovation should result in short term and long term cost reductions, in alignment with TCS’s strategy. We need to review the innovation in knowledge management to see if the investment and the innovation really promote the firm’s strategy.

As described before, innovation is not confined to the four walls of the R&D division of a firm anymore. Employees and clients play a major role in the innovation process. In the context of a successful knowledge management innovation in the problem space, it is vital to expect high employee participation in a PSF. As was noted earlier in the company readiness section, this was an element of the failure in the “Notes” groupware implementation in 1991. If there is a misalignment between the structural elements (reward system, policy and procedure, and culture) and the innovation, then the chances of success are bleak.

The section below investigates alignment fit for this innovation with: I) Firm strategy; II) the Firm’s employees; and III) the Firm’s clients.

4.3.1 Alignment with firm strategy:

Ken Andrews [22], Professor at Harvard Business School, defined strategy as being a stream of decisions made over time which reflect the goals of the firm and the means by which the firm achieves these goals.

Here I will explore whether the firm should even pursue a given innovation. We will look at the firm strategy and see if the innovation in knowledge management is in alignment with firm strategy. Just because an idea is good does not mean the firm should pursue it. As Tim Brown of IDEO explains [23], “Being able to be empathic, not only to the end user but to the organization, is critical. The thing that kills most ideas is not that they’re not good ideas, it’s that they are not good ideas organizationally or culturally.” This was already witnessed in the “Notes” groupware implementation case described above.

As mentioned above, the firm’s plan and actions should help promote its strategy. Professor Peter Weill, Global Chair at the Center for Information Systems Research (CISR) at MIT’s Sloan School of Management argues that IT savvy firms have an operating model that reflects and promotes firm’s strategy. An *Operating Model* is the necessary level of business process integration and standardization for delivering goods and services to customers [24].

Standardization of business processes and related systems means defining exactly how a process will be executed regardless of who is performing the process or where it is completed. Standardization in the context of IT outsourcing firms that are operating on a global basis can result in dramatic increases in throughput and efficiency. *Integration* links the efforts of organizational units through shared data. Benefits of integration include increased efficiency, coordination, transparency, and agility. Again, in the context of global IT outsourcing firms, and specifically addressing the knowledge management issue, integration plays a major role.

My hypothesis is, if a globally operating IT outsourcing firm needs to address the issue of knowledge management, it should have a very high degree of standardization and business process integration. For example, an IT outsourcing firm that has global clients and global development centers will not do very well in mounting an effective, firm-wide knowledge management initiative if the firm is geographically organized, with each region having its own set of industry verticals, services, and processes. We need to look at the firm's operating model to see if there is a good alignment between the innovation addressing the knowledge management issue (any innovation for that matter) and firm's operating model. There are four different operating models [25] a firm might pursue.

1. Diversification (low standardization, low integration)
2. Coordination (low standardization, high integration)
3. Replication (high standardization, low integration)
4. Unification (high standardization, high integration)

These are explained below.

Based on the Market Analysis chapter, we know that the major IT outsourcing firms operate on a global scale and have standardized firm-wide processes and very high levels of integration to minimize overall cost and delivery time. We can conclude that these firms operate with the Unification model. Given this context, we need to investigate if the innovation around knowledge management for these firms is aligned with this operating model. Although this operating model strongly supports cost discipline and timely delivery, it does negatively affect local creativity. A related challenge for the firm operating under the Unification model appears in the case of acquisition. Any firm acquired is likely to have different systems and processes, necessitating that the acquiring firm rip and replace existing infrastructure within the acquired

firm. How does an innovation that relies upon very high degree of standardization, and business process integration fare in this context?

4.3.2 Alignment with Resources:

Unlike the manufacturing or retail industries, PSF's biggest asset is their employees. The innovation under study needs to be investigated relative to its alignment with employees. Does the innovation offer them a clear incentive? Improvement in productivity, or quality, higher pay, additional bonus, appreciation, promotion are some of the incentives employees could be looking for. If none of these are offered and if the innovation is still aligned with firm strategy (it is very unlikely but possible), then the firm needs to recognize this mismatch and plan to address it as a risk.

IT outsourcing (and PSFs in general) being a knowledge-based industry, we need to review how this innovation affects the means by which employees acquire knowledge and apply that knowledge to real world client problems. As we saw in the Market Analysis chapter, most of the global players in this industry have extensive internal training programs. We need to assess whether this innovation enhances employee's knowledge beyond what can be taught in a class room setting. Does this innovation help employees acquire relevant information and knowledge in real time to solve a specific client problem at hand?

Another hypothesis is that, in today's world, the innovation has to go one step beyond the traditional means of imparting general knowledge around specific functional areas such as, for example, coding in Java, or usability testing of web applications. It has to provide information on demand that is relevant for the problem at hand, such as, what additional data privacy steps need to be taken to address the latest revisions made this year to the HIPAA guidelines?

4.3.3 With Clients:

As discussed earlier in the Overview of PSFs and the Market Analysis chapters, the IT outsourcing business started with cost-driven services and has evolved into more strategic partnerships between the clients and service providers. It is important to analyze the proposed innovation from clients' perspective. If a given innovation helps clients obtain tangible benefits such as faster delivery, better quality and lower cost, then they will value this partnership. On the contrary, if the innovation adversely affects the clients due to, say, reduced quality, project delays, or cost overruns—then clients might shop elsewhere.

Time and again, experts [26] have found that CEOs of client firms conclude that — from a technology standpoint — higher quality is the biggest plus-point of the outsourcing deal. Robert Morgan and Jean-Louis Bravard in their article in *Computer Weekly* [27], argue that the path to higher quality is innovation from the outsourcing firm. They say that in recent years, this growing realization has driven fresh approaches that have radically changed the way outsourced operations are handled. As we saw in the previous chapter “Overview of PSFs”, this shift from cost focus to innovation focus via quality focus requires that the outsourcing supplier changes with the customer. These IT outsourcing vendors did come up with a very innovative idea of shipping work to countries like India that offered cheap labor to achieve the cost agenda. They will need to innovate again, to achieve the quality focus, above and beyond the original innovation used to deliver cost savings.

As was discussed in the last section of the Market Analysis chapter, more sophisticated clients are viewing IT outsourcing firms as trusted partners and are engaging in multi-year multi-million/billion dollar contracts. There is an evolution in expectation from the clients from one of

pure cost saving perspective to one of higher quality, resulting in strategic partnership. Per Gartner [28], the bar is being raised for all service providers promoting offshore service delivery. While clients initially accepted offshore application services for cost savings, they expect that a provider's Global Delivery Model (GDM) will now also meet high standards for value, quality, skills, predictability, and reliability.

The next question then, is: will the innovation under study help the outsourcing firm foster such a relationship with its clients? Will this innovation help build and improve the trust and “stickiness” with clients? Given the current economic conditions, when clients are seeking cost reductions more than ever, in addition to quality-of-service improvements, will this innovation offer any cost savings for the firm’s clients?

Clients may benefit if they are part of the knowledge-sharing, so that they can better respond to complex business challenges. It would be even better if this knowledge-sharing occurred in real-time. Clients could benefit if the outsourcing firm could pass on the cost savings resulting from this innovation to its clients. Clients would also benefit if this innovation for knowledge management included the latest best practices for the client firm’s industry vertical (a Retail client learning about the latest IT services and processes around supply chain management in a specific country, for example) that they can leverage to improve their own business. Clients who might be at lower CMM levels in terms of processes might benefit if this innovation could help them improve their processes. But this task is not easy. This assumes that the clients are willing to and are able to organize themselves in such a way that they can seek help from the outsourcing firms and leverage that help. Such a transformation of the clients depends on leadership commitment, the structure of their organization and the degree of cultural cohesion in the firm..

4.4 Market Fit:

The innovation under investigation has to make sense in the context of not only the firm and its stakeholders but also in the competitive market environment in which it is deployed. For example, United Airlines equipped some of their aircraft at a cost of \$20 million with avionics equipment that would be required for the new GPS-based traffic control system (called NextGen) that was planned by the Federal aviation Authority (FAA) [29]. Unfortunately, for United Airlines, this change did not happen soon enough. United Airlines ended up retiring the aircraft that were equipped with the new equipment. United Airlines was the first airline to proactively implement this innovation, but unfortunately, prematurely. United Airlines tried to get the first-mover advantage, but it did not work. This lesson is valid for any business. A closer example is Capgemini's move to cloud computing [30]. Until major firms involved in cloud computing (such as Amazon, Google, and Microsoft) agree on common standards, clients may not feel comfortable moving their business to the cloud. If this stalemate continues for a long time (similar to the NextGen system described above), then the time, effort, and money Capgemini spent on this innovation may not be recovered. But if the market moves in the direction Capgemini expects, then Capgemini will have the first-mover advantage.

To bring the discussion back to the innovation at hand, the investment in time, effort, and money in developing a Knowledge Management (KM) tool has to make sense in the larger context of the IT outsourcing industry, not just the firm trying to implement it. The following sections explore what competitors are doing; what new technologies are on the horizon that might take this industry on a different trajectory; and what political, regulatory, and economic conditions might affect the utility and impact of this innovation.

4.4.1 Competitor analysis:

Given the examples outlined above, the prospective outsourcing innovation must be relevant not only to the implementing firm's internal strategy and stakeholders but also to the firm's industry in general. We need to evaluate where the industry is headed and what competitors are doing. We need to evaluate this innovation in comparison with other innovations being implemented in the IT outsourcing world. These may dictate how fast the firm should act.

The hypothesis is that any IT outsourcing firm wanting to implement a knowledge management innovation should review what competitors are doing and evaluate its innovation in that context. The firm may either pursue the innovation to achieve the first-mover advantage or just to stay competitive in the market if it others already have a comparable tool.

4.4.2 Sustainability:

Numerous external factors affect how a firm can pursue its innovation agenda. Competitors, regulators, market conditions, politics, all have significant influence on a firm's ability to innovate. I will explore several of them that are relevant to the IT outsourcing industry in the following sections.

4.4.2.1 Economic conditions:

Global economic growth (gross domestic product [GDP]) is forecast to contract 1.2% in 2009 after growing 2.3% in 2008, which represents the sharpest slowdown in the global economy since 1982 [31]. The rate of overall IT growth during 2009 will be much slower, and perhaps negative, compared with 2001 [32]. Figure 10 [33] below shows the previous estimates and the revised estimates for global IT spending.

Figure 10 - Global IT Spending

Table 1. Preliminary Gartner Forecast for Global IT Spending Growth, 1Q09 Update (Millions of Dollars)

	2008	2009	2010	2011	2012	Five-Year CAGR (%)
Global IT Spending (4Q08 Update)	3,439,349	3,504,707	3,680,332	3,881,282	4,085,732	5.1
Annual Growth Rate (%)	7.5	2.2	5.0	5.5	5.3	-
Global IT Spending (1Q09 Update)	3,358,349	3,234,678	3,313,721	3,481,184	3,671,630	3.0
Annual Growth Rate (%)	6.0	-3.7	2.4	5.1	5.5	-

Note: Numbers shown are preliminary 1Q09 estimates.

Source: Gartner (March 2009)

The growth projection for the IT outsourcing industry in 2005 for 2009 was 6% [34]. The revised estimate as of March 2009 is -3.7% [35]. A downturn of this magnitude has significant implications for the industry. As recently as 2008, every firm was struggling to hire, train, and retain talent. As mentioned in the Market Analysis chapter, Cognizant hired 24,000 employees in just one year. Reduced earnings and pressure from cost reductions are bound to have an impact on resources. Will an innovation in knowledge management coupled with a need to cut cost result in layoffs? If that is the firm's strategy, what kind of reception will the C2 innovation have among firm's employees? Will this situation force the firm's leadership to pitch the innovation in a different light? Questions that were not relevant before can now force the innovation to take a different spin. Can this innovation thrive in this kind of environment and uncertainty for employees?

4.4.2.2 Client expectations:

I would argue that clients seeking services will look for reduction in cost and increase in value from the vendor. These two needs, although not mutually exclusive, are nevertheless difficult to achieve for the vendor. I will discuss these two customer needs in the following sections.

4.4.2.2.1 Cost reduction:

According to IDC's Top 10 predictions for 2009 for outsourcing services [36], the number one prediction is related to cost. The current economic downturn has forced clients to seek bargains wherever they can. Up to 30% of the outsourcing deals signed in 2009 and 2010 will be pragmatically—and potentially short-sightedly—focused on providing a quick fix for financial problems, creating additional problems that will hinder agility and business competitiveness [37]. To help customers meet their need to drive down costs, outsourcers need to implement a full range of cost-savings capabilities. However, the challenge for outsourcers in implementing the traditional, labor-based, cost-saving model, referred to as offshore or global sourcing model, is the necessity for scaling their human resource pools. There is the risk that they will reach a size that inhibits the firms' ability to shift toward more asset-based models; in this scenario, clients won't be paying the hourly rate on a time and labor basis, but will be buying pre-configured, customizable IT products or solutions from these vendors. IDC views this as a necessity for the long term. Can the innovation in question address this pressing issue, and if so, how? The innovation should be able to clearly quantify such savings for the firm which then may be passed on to the clients.

4.4.2.2.2 Value added services:

IDC's number 2 prediction concerns customers' need for value-added services beyond cost savings. The goal of these services will be to not only help customers move to new technologies and delivery capabilities but also provide them with longitudinal, "transformational" support over the duration of an engagement. We would need to investigate whether the innovation in question can help the outsourcing firm provide this kind of value-added service to its clients. My hypothesis is, that an innovation in knowledge management should be able to help the firm provide this kind of value to its clients and thus be able to sustain the innovation long term.

4.4.2.3 Alternative Delivery Models:

The traditional labor-intensive market is facing some difficult challenges from the emerging delivery models for IT services. Gartner asserts [38] that 2007 clearly signaled the point of no return for the transformation; toward industrialized, one-to many, outcome-oriented IT services that use the alternative delivery models. These new delivery models have the potential to alter the IT services landscape in a significant way. These new delivery models for IT services include the models discussed below.

4.4.2.3.1 Software as a Service (SaaS):

SaaS represents software that is rented rather than purchased. Instead of buying software and paying for periodic upgrades, SaaS is subscription-based, and all upgrades are provided during the term of the subscription [39]. When the subscription period expires, the software is no longer valid. SaaS implies Web-based applications, in which all software is downloaded

from the Web as needed or run using a Web browser connected to a central, server-based software system.

4.4.2.3.2 Business process utility (BPU):

BPUs are externally-provisioned process management services based on highly standardized processes and unified, one-to-many technology platforms. The service provider manages direct business process inputs (often automated) as well as business processes. Contracts typically feature per-transaction fees with monthly minimums [40].

4.4.2.3.3 Infrastructure utility (IU):

IU is a shared IT infrastructure architecture provided through on-demand services. Pricing is based on service use and proven, ongoing reductions in the fixed baseline (or subscription fees) and unit costs. The IU is open, flexible, predesigned, standardized, virtualized, highly automated, secure and reliable [41].

4.4.2.3.4 Cloud computing:

Cloud computing is a style of computing where massively scalable, IT-enabled capabilities are delivered as a service to external customers using Internet technologies [42]. Cloud computing deserves a special mention in our analysis, due to its potential impact on the IT outsourcing industry. According to Gartner, cloud computing is considered one of the top 10 strategic technologies for 2009. Per Gartner, a strategic technology is one with the potential for significant impact on the enterprise in the next three years. Factors that denote significant impact include a high potential for disruption to IT or the business, the need for a major dollar investment, or the risk of being late to adopt.

4.4.2.3.5 Implications of the Alternative Delivery Models:

According to Ben Pring - Research Vice President at Gartner, during the next five to seven years, these new and alternative IT delivery models, which are already in use by aggressive early technology adopter organizations, will become mainstream [43].

IDC expects [44] that 2009 will witness a transformational shift in global outsourcers and service providers. Outsourcers will ultimately be driven to evolve their own (private) cloud-based strategies as their clients seek to incorporate the full spectrum of traditional and next-generation application lifecycle and hosting services.

2008 saw the growth and proliferation of cloud model disruptors such as Joyent, Boomi, Bungee Labs, Heroku, Coghead, and Enomaly positioned alongside well-established online players such as Amazon Web Services (AWS), Force.com, and Google [45]. Traditional players, including IBM, Microsoft, Oracle, and others, have also entered the legendary cloud with a range of extensive application service capabilities.

We need to evaluate if and how cloud computing would affect the outsourcing firm that are pursuing the innovation in knowledge management and the innovation itself. My hypothesis is that exploration of Cloud Computing as an alternative delivery model will be considered seriously by all the IT outsourcing firms, and that an innovation in knowledge management will continue to co-exist with firms' continuing exploration of Cloud computing. It will be interesting to follow these two trends (Cloud computing and innovation in knowledge management) and see how one helps or hurts another in the next few years.

4.5 Summary:

In this chapter, we discussed various criteria we would use to evaluate a given innovation in knowledge management in IT outsourcing firms. In the next chapter, I will apply these criteria to Cognizant 2.0 (C2), a Web 2.0-based knowledge management tool developed by Cognizant for use by its employees and clients.

5. Case Study - Cognizant 2.0 (C2) from Cognizant Technology Solutions

In the previous chapter, I described a framework that can be used to analyze innovations in the knowledge management area for the IT outsourcing industry. In this chapter, I will apply that framework to analyze Cognizant 2.0 (C2), a Web 2.0-based knowledge management tool created and implemented by Cognizant Technologies, a New Jersey-based IT outsourcing firm.

First, I will provide a brief introduction to Cognizant, and then I will describe the data collection methods for the purpose of this thesis. This will be followed by a brief description of C2. The final section will apply the analysis framework to Cognizant and C2. The analysis will discuss C2 through the lens of: a) Definition criteria; b) Alignment criteria; and c) Scan for Market fit. I will conclude this chapter with a discussion of how C2 fares on each of these criteria. This discussion will form the basis for my conclusions and recommendations in the next chapter.

5.1 Description of Cognizant Technologies:

Cognizant was founded as Dun & Bradstreet Satyam Software (DBSS) in 1994 in Chennai, India. It represented a collaboration between U.S.-based Dun & Bradstreet Corporation (D&B), a financial information and analysis company; and Satyam Computers. DBSS's primary purpose was to develop software for D&B's U.S. operations. By 1998, DBSS had 575 employees and revenue of \$12 million. DBSS was given the name Cognizant Technology Solutions (Cognizant) in 1998, and was headquartered in Teaneck, New Jersey.

Today, Cognizant is a \$2.8 billion company with over 61,700 employees distributed across 40 development centers worldwide. Cognizant provides services to many industry verticals, including Banking and Financial Services, Retail, and Health Care. Cognizant's IT service offerings include Business Process Outsourcing (BPO), Supply Chain Management, and Software Testing services. See *Appendix H* for a complete list of global development centers, industry verticals supported, and services offered by Cognizant.

Cognizant distinguishes itself from other IT outsourcing firms via its "client-centric" strategy. As noted earlier, Cognizant invests substantially more in onsite resources than most of its competitors. Cognizant was one among the first IT outsourcing firms to organize by industry verticals rather than by country or region. See *Appendix I* for Cognizant's goal statement and client-centric delivery model. Cognizant serves over 567 clients worldwide which includes 46 of the Fortune 100 firms. 90% of annual revenue comes from existing clients. See *Appendix J* for a breakout of its clientele. Cognizant derives 80% of its revenue from firms within the U.S. So far, Cognizant has delivered more than 12,000 projects to its clients. Gartner identifies Cognizant as one of the "Leaders" in the IT outsourcing industry.

5.2 Data collection process:

I collected information on Cognizant and C2 from the following sources:

- 1) Telephonic and in-person interviews with:
 - a. Malcolm Frank - Senior Vice President, Chief Strategy Officer and Chief Marketing Officer at Cognizant,
 - b. Rani John Britto - Marketing Manager at Cognizant,
 - c. Shashank Upadhyay - Sr. Consultant for Knowledge Management at Cognizant;
- 2) Demo of C2 as part of its rollout to Cognizant's marketing teams;
- 3) Video conference call and C2 demo from their Holliston office with the Chennai team, including Rajagopal Sukumar - Chief Knowledge Officer (CKO), Rajashree Natarajan - Head of Quality and Associate Vice President, and Jayachandran Chittenipat - C2 Product Manager. This meeting was organized for Prof. Tom Davenport of Babson's F.W. Olin Graduate School of Business;
- 4) Cognizant's website;
- 5) Draft copy of white paper on C2 by Cognizant;
- 6) Case study on Cognizant by Prof. Robert Eccles of Harvard Business School;
- 7) Gartner's report on Cognizant, as part of its Magic Quadrant report on the IT outsourcing industry for North America, 2008.

5.3 Description of Cognizant 2.0 (C2):

C2 is Cognizant's Web 2.0-based knowledge management (KM) tool. C2 was implemented in response to its CEO's vision, provided to the Chief Knowledge Officer (CKO) in June, 2005. By early 2006, Web 2.0 was identified as the foundation for the new KM tool. Cognizant engaged 300 resources (peak size) and invested approximately \$20 million in the development of C2. The tool entered beta testing in October, 2007 and went into production in April, 2008. By end of 2008, 60% of application development projects were on C2. According to Cognizant officials, with C2, average project cycle times have fallen nearly 20% and labor costs 17%.

Rajagopal Sukumar, the CKO identified Web 2.0 as the foundation for C2 due to its participatory nature. C2 combines the unstructured participatory nature of Web 2.0 with Cognizant's highly structured knowledge bank, known internally as "left side" and "right side"; referring to parts of the screen that mirror the human brain function. Currently, there are 20 communities on C2, such as, Project Management, Business Development, KM, Testing, Open Source, Arts, Photography, Humor, and Education. C2 garners 2 millions page views a month on average. C2 uses a combination of software tools such as AJAX, .Net framework 3.5, MS SQL Server 2000, 2005, PHP / Java, and MSFT Sharepoint 2007. Neither a detailed technical architecture nor a detailed description of the C2 platform can be provided, due to the system's proprietary nature. See *Appendix K* for available details on C2.

5.4 Analysis of C2 via the framework:

This section analyzes C2 across various attributes described in the previous chapter. The analysis is broken down into the following components: 1) Definitional criteria; 2) Alignment with firm strategy, resources, and clients; and 3) A market scan to review the impact of competitors, economic conditions, new technologies, and other external factors.

5.4.1 Definition Criteria:

Here I will evaluate C2 in terms of: 1) what problem C2 is trying to solve; 2) the argument that traditional knowledge management systems are inadequate to solve the problem that Cognizant is attempting to solve; 3) the type of innovation that C2 represents: radical, incremental etc; 4) the process of innovation to see if and how users (employees and clients) are participating; and 5) the readiness of Cognizant as a firm— organizationally and culturally—to embrace C2.

5.4.1.1 Problem description:

A Gartner report [1] describes the challenge that IT outsourcing firms face. A service provider's GDM relies on processes and methodologies, as well as project and program management to **effectively leverage** geographically dispersed resources in delivering core technical application services on behalf of clients.

As noted in the earlier section on company information, Cognizant has over 61,000 employees spread across 40 development centers throughout the world. The firm offers a variety

of services to numerous, distinct of industry verticals. Hence, they face a monumental challenge in *effectively* leveraging their resources for the following reasons: 1) almost all of these employees are knowledge workers. They develop the tacit knowledge over a period of time while working on projects. This knowledge does become distributed during ‘water cooler’ discussions as part of one’s personal network. Hence, this is not the most effective means for collecting and distributing this critical knowledge;

2) Thousands of new employees are hired every year. Cognizant hired 24,000 employees in 2007 alone. Although these employees go through Cognizant Academy Center for technical training, the tacit knowledge one gains by working on complex projects is not easily acquired through formal training. There is no easy way for these new employees to get this knowledge unless they go through similar projects and challenges; and finally

3) Geographical distance, time zone differences, and cultural difference among employees will add to the problem of effective knowledge management across and within industries, functional areas, and geographical locations.

Traditionally, knowledge management has been a headquarters function. Typically, employees are asked to provide important, project-related documents once the project is over, so that the central group can add or refine the central repository. The central group is in charge of developing best-practices, processes, and templates for everyone in the firm to follow; with very little guidance for context specific questions and concerns. This traditional approach suffered from two drawbacks. One is related contribution and the other is related to consumption. According to Rajagopal Sukumar, “in a traditional centralized KM, very few people contribute content (known in the industry as the 1% rule - only 1% of a community contribute content) and

very few people consume the little content that is accumulated”. Typically, people do not contribute content because they don’t perceive any incentives to do so; and consumers do not consume because the documents and processes the central group pushes does not address the context specific needs of the consumer. This need-based pull is not supported well by this central group-based push system. Although a majority of the knowledge management-reliant firms have evolved from the old three ring binders to posting documents online, the fundamental issues still remain. In absence of a sophisticated system, the central group won’t be able to keep up with: collecting; organizing; and delivering context sensitive information in real time.

This issue is highlighted at Cognizant with the following example. Over the years, Cognizant’s account management teams in the Banking and Financial Services (BFS) business unit, which happens to be Cognizant’s largest industry vertical, have built best practices and innovative approaches in their accounts. One of the senior members of the BFS practice manually collected best practices from different accounts in BFS, compiled them and published a comprehensive document (nearly 100 pages) and distributed it to all BFS accounts. Most account teams did not even read the document he had put together. Cognizant’s KM team felt that the best way for the consumers to get the knowledge needed was not by pushing it unilaterally but by providing it when they actually need it.

Per Cognizant’s senior executives, C2 was developed to:

1. Enhance collaboration in real time among knowledge workers at multiple locations,
2. Enhance quality assurance and output consistency,
3. Disseminate the firm’s best practices,

4. Promote the collective sharing of the knowledge resident in each Cognizant associate
5. Become an ecosystem enabling both internal collaboration and IT delivery without regard to geography
6. Route the work such that Cognizant can make use of the time zones effectively (to decrease time-to-market)
7. Bring customers and partners into the ecosystem, so that they can benefit from the vast knowledge at Cognizant and also facilitate collaboration with clients

5.4.1.2 Type of innovation:

As we have discussed before, Cognizant operates with well defined processes and uses centralized project management tools. Adherence to these processes is mandated in the firm. C2 is not changing how Cognizant operates. C2 has made this process a lot easier for its employees. This innovation is occurring in one sub-system (the KM area) of this business. I would argue that this innovation would not fundamentally change the way in which IT outsourcing firms conduct their business. However, C2 has revolutionized the knowledge-sharing process at Cognizant. Employees are embracing it much faster than the leadership team imagined. This has resulted in significant improvement in delivery time for projects and garnered appreciation from clients for the real time project status information they get. Clients are asking if C2 can help in defining and improving their own internal processes. I would conclude that this is a significant “modular” innovation.

5.4.1.3 Process of Innovation:

One of the key hypotheses was that successful implementation of a KM tool requires active user participation to contribute and consume information. To encourage user participation from day one, Cognizant allowed blogs on any topic, in keeping with the web 2.0 spirit of freedom, when it rolled out the blogs in mid 2006. Right from the early days, the CEO actively participated in the blogs. He first blogged about company's strategies and then invited ideas from employees. This resulted in over 400 ideas from employees. In fact, one of the employees was selected for his excellent ideas and was asked to present to the entire strategy team of Cognizant. Currently, there are over 10,000 bloggers, 19,000 participants in blogs, and around 45,000 viewers of the blogs. Although there is a moderation team in place, Cognizant allows the community to self police.

Cognizant has taken several steps to encourage user participation: 1) C2 allows users to create and modify content and also decide if and how much they want to share with the rest of the community; 2) Cognizant has established an implementation team that trains the new users and encourages their participation; 3) The firm gives out annual best project awards to projects among those who utilize C2; 4) The firm recognizes the top bloggers for the month; 5) Cognizant officially sponsored charities that employees were participating on their own. The firm thus demonstrated its support for employees' social activities; and 6) Cognizant has established teams of Evangelists, Implementation Advisors, Trainers, and an e-Learning System to propagate the use of C2. Events like Unconferences, KCafes, KNovember (November as a month of KM) are held to generate more awareness about C2 among employees.

As of March 2009, 3,200 projects were on C2. This is more than twice the number of projects Cognizant's senior executives thought would be on C2 by that time. Based on the data provided, I would argue that, there is a very high degree of user participation in C2, a prerequisite to make it successful.

I would also argue that C2 maps to the Orchestra model of innovation discussed in Chapter 4. C2 is a technology platform created and implemented by Cognizant. Cognizant is the dominant player in this model. Cognizant has sought active participation from its employees who participate via blogs, instant messaging, and social networks. Cognizant has started rolling out C2 to its clients. Currently, clients are allowed to view the project status in real time, but in the future, they will be expected to participate more fully, including defining their process models, engaging in blogs to discuss best practices, and other activities. This model of innovation, in my opinion, is very similar to that of the Boeing Dreamliner, example provided in the previous chapter. I see Cognizant in the center of this model. The employee and client participation are free-form but subject to certain guidelines. This platform is unique to Cognizant and can't exist outside of Cognizant. The tool and process are designed to improve KM in Cognizant and thus improve the overall quality and efficiency *for the firm*. One could argue that a successful and fully-realized implementation of C2 pushes Cognizant into the arena of software provider firm.

5.4.1.4 Readiness for Innovation:

As was shown previously with the Lotus Notes example, if an innovation is not right for the firm organizationally and culturally, its chances for success are relatively low. In that light, the Cognizant culture and demographics position it well for receptivity to an innovation such as C2. Several factors make it conducive:

- 1) The firm is fairly new (15 years) and has a large central repository of documents and templates. Staff have been following the organizational processes and methods diligently. It is not difficult to promote these best practices and processes through a central tool;
- 2) The Lotus Notes implementation of 1991 did not provide the requisite infrastructure for easy and effective communication among users. People were not prepared for the use of Notes. However, C2 has the advantage of a pervasive Internet. Widespread Internet usage has allowed people to communicate with each other using Web 2.0 tools such as instant messenger, chat rooms, and social networks (e.g., FaceBook, Orkut) in their personal lives,
- 3) The average age of Cognizant employees is about 26 years. These users culturally are ready for C2. They have been using similar Web 2.0-based tools in their personal lives. As can be seen from the success of YouTube, FaceBook, and MySpace, the younger generation is more open to information-sharing in general. Transitioning use of these tools from personal usage to professional usage to share information is relatively easy for these employees.

Based on this context, I would argue that Cognizant is organizationally and culturally ready to embrace C2.

5.4.2 Alignment:

Here I will investigate whether: 1) C2 promotes firm's "client-centric" strategy; 2) C2 encourages active participation by employees; and 3) Clients benefit from C2 and will welcome its usage. If any of these components have a misalignment, then that should reflect as a risk for the successful implementation of C2.

5.4.2.1 Firm strategy:

Cognizant's value proposition section clearly articulates its aspirations "As a **customer-centric, relationship-driven partner**, we are redefining the way companies experience and benefit from global services via a unique delivery model infused by a distinct culture of high customer satisfaction. Cognizant delivers a trusted partnership, cost reductions and business results". We need to evaluate C2 in this context. The following sections describe if and how C2 aligns with this firm strategy.

1. Cognizant started using C2 internally in October 2007. Currently two third of the employees use C2. C2 has been rolled out to 12 clients. According to Cognizant sources, these clients reportedly appreciate the real time project status. Customers who see the possibility of defining and refining both IT and non-IT processes on C2 are asking Cognizant to help them improve their internal IT and business processes using this platform. This development is very much in line with Cognizant's trusted partnership philosophy. In fact, C2 allows the senior members of Cognizant to focus on helping clients in doing their business better. C2 is expected to increase the "stickiness" with clients by the added value C2 provides at no extra cost at this point.

2. Cognizant also expects to reduce cost and improve delivery time with C2. This cost reduction can really come handy during tough economic times like the current one, when a firm like Cognizant that prides itself in pursuing a “client-centric” strategy will need to offer some discounts to clients to retain them. A demonstrated 17% cost reduction and a 20% reduction in delivery time aligns C2 well with this reality.
3. We discussed the operating model in the previous chapter. Cognizant has a global delivery system that has a strong emphasis on standardization for realizing greater efficiency. Cognizant is organized along industry verticals and there is a strong integration between various horizontal functions irrespective of geographic location, to solve specific client problems. These two factors (standardization, integration) suggest that Cognizant is operating under the Unification model. Such a highly centralized model is actually good for implementing a firm-wide knowledge management tool. It would have been a nightmare if the firm was organized geographically and each region or country operated with different systems, processes, and artifacts.

This unification operating model does have some drawbacks. Encouraging local creativity yet preserving global unification model is a challenge. Creativity needs freedom to experiment, whereas the unification model imposes standardization. C2’s challenge is in providing a venue for users to be creative within the framework it provides. Another challenge is with mergers and acquisitions. If Cognizant were to acquire another firm, it is very likely that it will need to rip and replace the acquisition’s IT infrastructure. C2 may not be compatible or useful with these new members of the firm. But these challenges are not unique to C2; they are more globally applicable to Cognizant as a firm.

5.4.2.2 With resources:

As we have discussed on several occasions in the previous chapters, employees are the most important resource for a PSF. Cognizant is no different. The following sections explore different structural elements for Cognizant such as culture, policies, and incentive system as they relate to employees to see if they hurt or help C2.

5.4.2.2.1 Culture:

Cognizant has grown organically for the most part. This has allowed it to maintain a strong company-wide culture. They make sure that new offices imbibe the firm culture by insuring that senior executives spend considerable time in new offices, and inviting staff from new offices to visit the main campus in Chennai, India, for workshops and get-togethers. Cognizant grew from 14,000 people in 2005 to over 61,000 by 2008. Such a surge in growth in the most important asset for the firm can put a lot of strain on its ability to maintain the unique culture. The traditional training that is offered to the new employees is more technical in nature and is inadequate to foster the culture the firm wants. Given this context, C2 comes across as a promising tool. Cognizant executives believe C2 is an ecosystem that has enabled internal collaboration without regard to geography. New employees can learn about the best practices and processes and get answers to specific problems they are encountering. In fact, the central training group monitors blogs for any unanswered questions and helps get answers. This kind of support structure will help foster the unique firm culture with these new members. They will appreciate and help instill the culture irrespective of geographic location.

5.4.2.2.2 Policies:

Cognizant made some strategic choices with C2. It made a controversial decision to allow blogs on all kinds of topics, not just work. The firm by and large allows the community to self police. Moderators do exist and get involved only in extreme cases. But such decisions are made on case by case basis. Employees are encouraged to ask questions even if they are deemed stupid. This kind of freedom has actually helped the employees to feel empowered to participate. This stands in stark contrast to the Notes implementation case, where employees were not sure how their participation would be viewed by the firm.

This flexible policy has some negative consequences as well. Expanding the usage of a social network-styled tool for business purpose across different countries with different cultures has its own challenges. Blogs can contain not just business-related information, but also social discussions. Nationals in India may take offense to remarks that a European staff-person made; to which an American employee may be totally indifferent. Policing and micro-managing such interaction is neither easy nor helpful. This challenge will become magnified if clients start participating in the C2 blogs.

5.4.2.2.3 Incentives:

The Cognizant leadership team feels that employees use C2 because it is easy to use and it is helpful to them. Cognizant does not offer any monetary incentives other than the recognition one gets for being a popular blogger. Cognizant feels that two types of incentives exist for using C2. One is the intrinsic value associated with peer and firm recognition that triumphs monetary incentives, but more importantly, the second one is the need to reduce costs for a given project. Each client account in Cognizant is treated as a separate P & L account, and is expected to achieve a certain profit margin. Hence, it makes sense for the client engagement staff to push C2 usage to reduce cost and delivery time. More usage will result in more contribution and consumption, which in turn will improve the quantity and quality of the information being shared. This in turn can help reduce overall costs reduce delivery times. A steep increase in user participation in the last year bears out this fact. But it is still a question whether the firm can sustain the same level of participation from its employees with the same incentive structure. A study on corporate blogging for a global IT firm between 2003 and 2006 by Anne Jackson of IBM, JoAnne Yates and Wanda Orlikowski of MIT, found that the top 80 users (or less than 1% of registered users) accounted for 42% of all weblog entries and 59% of all comments [2]. Cognizant will need to monitor the quantity and quality of usage, and refine its incentive structure to maximize active participation by majority of its users.

5.4.2.3 With Clients:

Before we go on to evaluate how C2 can help clients, we need to better understand the client-vendor relationship between Cognizant and its clients. As we saw in the previous section, the “client-centric” theme is central to Cognizant’s strategy. In fact, Cognizant seeks customers with the potential to become strategic clients, defined as those with the potential to grow to \$5 million in annual contract value (although not necessarily at initial engagement) [3]. According to Cognizant executives, their clients are more interested in a strategic relationship that yields better long-term value for them. On average, Cognizant performs 25-30% of the work on-site, much higher than any of its Tier 1 competitors. Given this context of heavy emphasis on clients, it is worth examining what these clients need beyond what they are already getting, and assess whether C2 can help.

According to a Gartner report [4], Cognizant’s clients feel that Cognizant needs to be more proactive in problem solving and reporting, resource planning, and service quality enhancements. According to Cognizant staff, many of their client firms are operating at a lower CMM level than their firm is, and are interested in improving their internal processes in order to reap the benefits of standardization. Given the current global economic recession, many clients are seeking the vendor’s assistance with identifying opportunities for cost reductions. Gartner expects 30% of the deals in 2009 and 2010 will focus on providing a quick fix for financial problems [5].

C2 offers real time project status visibility to its clients. This allows everyone involved (Cognizant delivery managers and clients) to manage resources more effectively. C2 allows

clients to view the process models Cognizant has put together. It even allows clients to define their own processes. Clients can take advantage of Cognizant's superior processes and project management tools and templates. Clients are getting C2 as a value-added service at no extra charge. Cognizant has gotten positive feedback from the 12 clients that are participating in C2. Cognizant executives feel that C2 will improve the "stickiness" with clients.

Based on the above factors, I would argue that C2 is certainly a good step in helping clients. What is less clear is whether clients would just stop at using C2 as a value-added service or would press Cognizant to pass on the cost savings resulting from use of C2. Another consideration for Cognizant is whether it wants to charge its clients for using C2. This can be a difficult proposition given the current economic conditions. This problem may worsen if a competitor implements a similar tool and passes on some savings to its clients. Cognizant will need to manage client expectations here. Another concern is around sharing knowledge with clients. Cognizant will need to walk a fine line when it comes to sharing "best-practices" with its clients by making sure it is not giving away any of the proprietary information of one client to another. I believe this concern exists with or without the use of a tool like C2.

5.4.3 Market Scan:

Here I will explore what others in the industry area doing, what kind of external factors might be affecting the usefulness of this innovation, what other alternatives are on the horizon.

5.4.3.1 Competitor analysis:

Cognizant's competitors are the Tier 1 IT outsourcing vendors. These include IBM, Accenture, EDS, Wipro, Infosys, TCS etc. All these firms offer highly sophisticated IT services and operate at a very high level on the unification model. Their challenge in implementing a similar tool depends on several factors. How mature is the firm? What historic information is available, and in what format and can it be aggregated and shared? Has the firm grown organically or through mergers and acquisitions? Does the firm have a strong culture that emphasizes collaboration and active user participation? Is the firm properly organized to facilitate integration across various functional specializations to solve a client's problems?

Cognizant executives believe they had a head start, and are currently ahead of their competitors in this innovation. It would not be possible to analyze innovations by Cognizant's competitors in the absence of information addressing the questions listed above. But industry experts agree on the trend. In fact, IDC predicts [6] that there will be an increased focus on providing new technologies (e.g., virtualization and social networks) to help reduce costs and improve productivity. IDC sees greater use of social networks as part of customer care service. I believe Cognizant has a head start with C2 in that it is well positioned to offer that kind of cost savings, improved productivity and enhanced customer service. The sections below discuss recent developments with several important competitors.

IBM has started Jazz as its online collaboration platform for software development [7]. The scope of Jazz is much broader than that of C2. Jazz is an open platform designed to support industry participants who wish to improve the software lifecycle. This offering appears to fit the Mod station model, where community of innovators come converge (on an open platform) to create new offerings by modifying existing innovations (software development process, in this case) that benefit everyone involved. However, IBM is still trying to tie it all together with its Rational software tools brand. I do not believe this innovation is specific enough to help IBM with its outsourcing clients.

Another competitor is TCS. TCS is focused on developing a next-generation process infrastructure called TCS InstantApps [8] to ensure delivery consistency with a high level of portfolio and geographic expansion. TCS claims it leverages the SaaS model and offers order of magnitude improvements in cost, quality, and time over traditional application development. In my opinion, Cognizant should pay more attention to this development as this has the potential to commoditize the IT services and thus dramatically cut prices way below the cost savings C2 can offer.

One other development is Capgemini's [9] collaboration with Google and Amazon (separately) in late 2008. Capgemini now offers professional services to clients in implementing Amazon Web Services (AWS). In fact, Gartner recommends [10] that other IT services firms consider imitating Capgemini's approach to working with Google and Amazon to prepare for the next wave of cloud computing-based opportunities.

5.4.3.2 Sustainability:

In today's world, technology and market conditions are changing at a rapid pace. Time to market has never been more critical. In this section, I will explore how C2 might fare, given the economic conditions, changing client expectations, and emerging technologies.

5.4.3.2.1 Economic conditions:

Current economic conditions are challenging for any industry. As mentioned above, there is market pressure to enter into client contracts with the sole purpose of reducing costs. Clients who value the long-term benefits over cost may also resort to price cuts for the short term. Given this context, we have to review C2 and see if this is still a viable innovation for Cognizant.

According to Stephanie Woerner, research scientist at MIT's Sloan School of management who has been studying proliferation of web 2.0 technologies in firms, many large firms have been experimenting with Web 2.0 technologies but have not attempted a large scale, enterprise-wide implementation. Since they haven't made major capital commitments, such experiments are shut down if the firms don't feel they provide near-term business value. But that is not the case with Cognizant. Cognizant initiated this innovation in early 2006 and rolled it out to a pilot group in October 2007. Currently, over two-thirds of the firm uses C2. Based on that usage data, we can conclude that C2 is pervasive at Cognizant. Cognizant has expended considerable time, effort, and approximately \$20 million in developing this tool. Given Cognizant's client-centric strategy, and the fact that Cognizant had \$232 million, \$350 million,

and \$430 million in net profits in 2006, 2007, and 2008 respectively [11], I would argue that this investment is not a major cost concern for Cognizant. I believe C2 makes sense for Cognizant as a business investment during difficult economic conditions. C2 not only helps maintain client-centricity and transparency by providing real-time project status updates, but also helps cut costs by reducing time to delivery. Although Cognizant is not planning on passing along these savings to clients just yet, I believe these savings can provide the much needed cushion when hard-pressed clients push strongly for short-term cost reductions.

5.4.3.2.2 Client expectations:

Client expectations can be categorized as short term and long term. In the short term, clients will look for cost reductions with the expectation that the quality of service won't deteriorate. In the long term, clients would expect the outsourcing firm to play a very active role in improving their business and thus provide them a competitive advantage.

5.4.3.2.2.1 Cost reduction:

We have discussed the cost aspect in the previous sections and concluded that, C2 will certainly help alleviate some of the cost burden by the improved efficiencies and reduced delivery timelines.

5.4.3.2.2.2 Value added services:

This is something on which Cognizant focuses and prides itself as a differentiating factor. C2 can certainly add value to clients by: a) offering the real time status and thus help with client's planning; b) helping clients to improve their internal IT and business processes by allowing clients to leverage Cognizant's sophisticated tools on C2 to define and model business processes, compare with best-practices, and refine them. In absence of any radical innovation that will change the competitive landscape, I would think Cognizant certainly benefits from C2 in moving up the value chain (refer to the type 2, 3, and 4 in the Market Analysis chapter).

5.4.3.3 Alternative Delivery Models:

As we discussed in the Overview of PSFs and Market Analysis chapters, outsourcing of IT services has evolved from on-site consulting and development services to the current GDM model. We need to evaluate C2 and the current, labor-intensive, client specific, custom development and services market in light of the alternative delivery models.

5.4.3.3.1 Cloud Computing:

There is the potential that Cloud Computing, as a platform, utilizing SaaS, has the potential to change the IT outsourcing landscape [12]. Major IT outsourcing PSFs have been rapidly adding headcount over the last few years and have realized a linear growth in revenues. Per-employee productivity growth, in other words, has been flat. Although C2 has an incremental effect in generating greater output with fewer people, I argue that the real benefit for Cognizant is if C2 allows Cognizant move up the value chain. Cognizant executives feel C2 has

the potential to help Cognizant transition from a labor-arbitrage model to a knowledge-arbitrage model; a potentially higher-margin activity. Placing countervailing downward pressure on margins, SaaS-enabled Cloud Computing has the potential to make IT outsourcing a commodity. Per Cognizant executives, they are watching Cloud Computing very closely and will jump in at the appropriate time. I argue that C2 can complement Cloud Computing but not enable Cognizant to compete with it.

5.4.3.3.2 Integrators:

A new offering is emerging — the multi-sourcing service integrator [13] (MSSI). In this model, a third-party contracted by the client acts as its agent for coordinating and connecting services and sources in an environment that uses several providers, (internal and external), for the delivery of IT and business process services. Royal Dutch Shell entered into such a contract with EDS in March 2008 to serve as their MSSI. The EDS deal of \$1 billion is part of Shell's 3 vendor, \$4 billion, 5 year, global infrastructure outsourcing contract [14]. This arrangement, in my opinion, has the potential to be a game changer. If EDS succeeds in the MSSI role, it will enable the firm to capture the bulk of the outsourced high-value IT work, while other providers will be left with low value, commodity IT work. C2 can help Cognizant improve internal efficiency and to some extent provide the same benefit for its clients; but there is insufficient evidence that C2 can significantly influence a client's decision to award the MSSI role to Cognizant (that is, if Cognizant intends to move toward that service model).

5.4.3.3.3 Per-User Per-Unit Per-Month (PUPM):

Per Gartner, based on the proliferation of advertising "IT as a service" as a pricing model, business buyers will force traditional providers to switch to per-user, per-unit, per-month (PUPM) pricing models by 2012 [15]. This possibility impacts all IT outsourcing providers. I would argue that any firm that leverages the cloud computing and SaaS model can relatively easily transition to this PUPM pricing model. C2 can help, but it alone may not be able to position Cognizant as a PUPM vendor. Moreover, Cognizant is more interested in moving up the value chain and offer strategic business and IT consulting and development services to its clients.

5.5 Summary:

In this chapter, first we looked at Cognizant as a firm, we then studied C2. Our next section looked at the type and process of innovation for C2. We then looked at the means by which C2 helps Cognizant differentiate itself from its competitors in the marketplace. We looked at the increased efficiency in project execution which results in reduced delivery time. We also learned about the rapid acceptance of C2 by Cognizant's employees and how that is fostering the community and pride feelings among the employees. We discussed the challenges of such an open communication and whether this kind of participation can be sustained in the long run. Finally, we looked at what competitors are doing, what market forces are in play and what alternative delivery models are on the horizon; and how C2 compares to those. In the next chapter I will draw some conclusions based on the framework we built in the previous chapter and the analysis of C2 based on that framework. The conclusion chapter will also include recommendations for future research work on this interesting topic.

6. Discussion of the Case Study

In this chapter I will review the framework used, its effectiveness in evaluating an innovation, discuss the data collection method and what could have improved the overall analysis. I will also discuss the current economic downturn and how it impacted the analysis. I will cover the conclusions and recommendations for Cognizant and for future research work in the next chapter.

6.1 Analysis framework:

When one defines a framework, one assumes certain level of independence for the attributes that are being measured. However, reality is more complicated than that. For example, the current recession would force businesses to seek outsourcing services for cost reasons and thus drive up the revenues, at the same time however, it might dramatically reduce attrition rate among employees due to the fear of not finding new job. Clients that were cruising along the path to a trusted partnership for business value would demand cost saving as well. The same clients that valued an innovation like C2 might prefer cost savings over C2. Product companies may encroach on the IT services segment by introducing off-the-shelf services. Changes in political landscape might force big clients to bring back some of the work in-house. All these factors test a firm's resolve to continue the funding for the innovation.

In nutshell, for any innovation to be successful, it has to do well on all key attributes and most important of all, the firm should be able to implement it relatively quickly to reap the benefits. I believe Cognizant did that with C2.

6.2 Data collection:

I was able to obtain most of the data for Cognizant and C2 through interviews and surveys conducted with the corporate resources listed earlier. Few data-gathering approaches could have added more value than these discussions with the principals. However, one absent element is client feedback about C2. This would have provided some insight into the challenges I described earlier about rolling out C2 to clients. Another approach that would have helped would have been to gather data on similar tools developed by other major IT outsourcing firms. But due to the proprietary nature of such innovations, it was not possible to gather that kind of data from other firms. The third data collection avenue that could have provided more insight was measuring the effectiveness of collecting and distributing tacit knowledge. Another element that could have added value to the analysis would have been to study the origins of this innovation in more detail. Rajagopal Sukumar mentioned that Motorola and Dresdner Bank had both experienced success with wikis prior to 2006. Comparison between Motorola's KM tool and C2 could have given provided greater insights into the difference between a pure product-based firm and a service+product firm.

6.3 Impact of the current economic crisis:

The current economic downturn does have an impact on this analysis. Various market forces are acting right now which could take this industry on a different trajectory. In 2008, the major firms were feverishly recruiting thousands of new employees in India; at which time, the labor market in that country was maturing and was becoming more expensive. The current crisis will dampen this activity. That environment is now responding to reduced demand, making it difficult to estimate the long term consequences to the recent strategy of labor-intensive

capability building. After the recession, will firms follow a different path? It will be a useful study to assess the role of innovation in helping IT outsourcing PSFs manage labor costs and staffing levels in the face of changing demand.

In the near term, clients will likely press the vendors strongly for cost savings; it will be challenging under these conditions for PSFs to avoid an adverse impact on service quality. It may also affect growth in the client/vendor trust relationship, although this is uncertain. Vendors may gain business from new clients seeking short term cost savings. This will put a strain on vendor's client portfolio-building strategy, since there will be strong pressure to pursue any source of new business in this down economy.

This financial crisis may actually push the commoditization of services to occur sooner than anticipated, as more and more clients will be willing to accept an off-the-shelf product as opposed to a custom built one.

This thesis research is occurring in the middle of the major global downturn in economic activity. Within in the last month or so, new developments cast doubt on the readiness of cloud computing. It is a fascinating yet challenging time to experience these changes, while attempting to establish a stable framework upon which to analyze a current innovation.

7. Conclusions and Recommendations

In this chapter, I will first discuss the strengths and weaknesses of the C2 implementation. I will then discuss what impact C2 could have on the key players: Cognizant, its clients, and its competitors. Then I will discuss what impact changes in the market place might have on Cognizant. I will end the chapter with recommendations for future research work.

7.1 C2 implementation

Emergence of consumer-driven collaboration and networking tools that are based on Web 2.0 played a major factor in the implementation of C2. Of course, these technologies were available to all PSFs. But then, not many firms had attempted globally implementing a Web 2.0-based KM tool to over 40,000 users as long ago as October 2007. In my opinion, Web 2.0 and related technological advances are just the foundation. The current success of C2 in terms of adaption and diffusion, in my opinion, is largely a result of internal factors.

Organizational factors: Cognizant's strong culture; organic growth; industry vertical-based organizing, heavy emphasis on quality processes, documentation and standardization.

Excellent planning: Not just using the tool for a top down deployment of processes, checklists, templates to share the explicit knowledge (using the left side of the screen), but also encouraging grass root participation by the employees via blogs, instant messenger, and forums to share the tacit knowledge (using the "right side of the screen").

The immediate measurable success factors for Cognizant are the reduction in delivery time and the corresponding reduction in cost. However; the next steps are much more challenging, in my opinion.

The very factors that helped the successful rollout internally will become the challenges from rolling out the tool to clients. Clients might be organized differently; each client may have its own culture that may or may not be conducive to the kind of collaboration C2 offers or expects. Clients may have varying degrees of process maturity. Hence, it is very important for Cognizant to set and manage expectations with clients. One critical issue Cognizant may have to deal with in the future is around sharing proprietary information among clients. If one client contributed certain information and it is used to help another client who may be a competitor of the first client, then Cognizant may have an ethical—or legal—issue. Another challenge for Cognizant would be in sustaining the level of participation by its employees and clients for the “left side of the screen”, and in improving the participation for the right side of the screen. If the employees can participate in a way that makes the “whole larger than the sum of its parts”, then Cognizant has discovered a winning, strategic innovation. Cognizant might be able to not only improve delivery time, but also bring insights from one employee to another in such a way that it can add real business benefits for its clients. Rajagopal Sukumar talks about the “digital breadcrumbs” that will be left during such interactions that can act as a market differentiator.

7.2 Impact of C2:

C2 is affecting many stakeholders: Cognizant the firm; Cognizant's employees; Cognizant's clients; and also Cognizant's competitors. It is conceivable that PSFs engaged in other types of services, and even unrelated businesses might develop with their own versions of C2. The following sections describe the impact of C2 in relation to each of the stakeholder groups noted.

7.2.1 On Cognizant, the firm

It is clear that C2 is helping Cognizant in several ways. One, it is helping to reduce delivery time and thus reduce cost. Two, it is allowing clients to have a real time access to project status information and thus improving customer service. Three, it is allowing senior managers to focus more on solving strategic challenges for clients and paying attention to logistical issues. Four, it is opening the door for collaboration among employees that would go beyond quality and process support services to more critical implicit knowledge that would not have been shared otherwise. C2 might help Cognizant retain its employees, who would become experts at leveraging the strengths of the tool to perform their jobs well.

7.2.2 On Cognizant's employees

C2 is helping them obtain the relevant documents, determine processes for the task at hand without much effort and thus allowing them to use their time more efficiently and productively. C2 is helping them by allowing them to seek just-in-time knowledge from the larger community for any new business or technical challenge. C2 is helping them by allowing them to pursue their personal endeavors as a community and thus build a greater sense of belonging.

7.2.3 On Cognizant's clients (current and potential)

Clients benefit now from access to real time project status. There is the potential for clients to improve their internal IT and business processes by leveraging Cognizant's highly mature, process-oriented practices. At present, with just 12 clients participating, it is not very clear what other benefits or issues might be there with C2 for clients. Clients will appreciate C2 as an added service as long as they don't have to pay for it.

7.2.4 On competitors

Major global players in this business seem to have a solid client base that is providing them significant repeat business. As was discussed in Chapter 3, establishing outsourcing partnerships is not a trivial task. It takes 12-18 months and results in multi-million dollar, multi-year commitments. On this scale, the cost reduction that C2 offers may not prompt a major vendor shift, for example where a Fortune 500 client would abandon their established vendor to contract with Cognizant. However, a competitive RFP process with a more efficient firm might place downward margin pressure on an established vendor.

All of Cognizant's major competitors in the global PFS market have the capability to develop their own KM tool that would be comparable to C2 (similar to the diffusion of offshore model and then GDM in the industry). If these competitors have similar attributes such as organic growth, strong firm culture, extensive technical training program for their employees, and heavy emphasis on processes (the evidence is that they do), then they can develop a similar tool and strive for a similar cost reduction.

However, it is worth mentioning that a continuous innovation approach cannot be bought off the shelf or easily replicated. It is based within a mind-set, and mind-sets are driven by the culture in which they operate [1]. Cultures are typically difficult to change in the short term.

Pushing templates and processes via the left side of the screen will certainly help firms reduce delivery time, but the real differentiator will be the effective usage of the right side of the brain.

In my opinion, Cognizant stands to gain in the short term with the first-mover advantage, but in the long run I believe that comparable innovations by others may neutralize this advantage. This potentially may pressure Cognizant either to seek further advantages by extending its mature innovation platform with added capabilities, or to seek other innovations.

7.2.5 On other industries

Other PSFs might be able to implement a similar tool (they have to match up their implementation plan with organizational factors) as they face similar challenges. However, the challenge of implementation increases significantly as vendors move along the service offerings spectrum from more product-based firms such as Cognizant, to pure practice-based firms like McKinsey. But the “digital breadcrumbs” concept might be useful for these firms, as consultants faced with a difficult challenge would be able to locate someone within the firm (irrespective of geographic location) who might have worked on a similar case much more quickly. However, I think that the success of such an implementation would depend on incentive structures that support consultants taking the time to help each other; and also on the role that collaboration and communication play within the firm.

7.3 Impact of marketplace changes

Several changes are happening in the marketplace that are creating strong pressures on the core business model. I will describe those in the following paragraphs.

7.3.1 Resource issues

The rapid personnel growth for these firms has been difficult to sustain. IT outsourcing vendors were, until recently, fighting for quality resources in the Indian talent market. A high attrition rate and sharply increasing labor rates were hurting firms' quality and cost proposition to clients.

7.3.2 New technologies

The emergence of other technologies such as SaaS and Cloud Computing are allowing product vendors to develop IT services for easier consumption by end clients, thus blurring the line between a product vendor and a service provider. Product firms such as SAP have developed what they call Co-innovation labs; where individuals, clients, and partner firms can participate in creating new business processes and tools [2]. Gartner predicts that this convergence will lead to a 30% decline in the number of vendors in their respective markets [3]. Gartner says the biggest competitive threat to the current people-centric Indian offshore model is the maturing of automation in the next five to seven years [4].

7.3.3 Cost pressure on clients

Clients may be more willing to work with off-the-shelf products instead of custom-built applications in their need to reduce costs due to the current economic downturn.

7.4 Impact of these changes on Cognizant

C2 is addressing the immediate challenges of knowledge management in a GDM setting (as described in section 5.4.1.1), but the question is, is it adequate? I believe it is not. Cognizant will need to decide its strategy and plan accordingly. Two possible options are apparent.

First, does Cognizant want to continue with its current client-centric strategy to move up the value chain, retain existing clients, and acquire new clients with a value proposition that shares risks and benefits? If this is the strategy, then the firm may need to significantly alter its workforce in the coming years in terms of the skills they possess. It may need to replace the thousands of programmers with hundreds of business analysts that have deep industry expertise and can use a combination of: IT specialists with a very high degree of specialization in specific technologies; and off-the-shelf products to provide a differentiating service that can result in significant business value creation for their clients. In this model, Cognizant will probably grow leaner but will be able to embed itself within its client firms.

The second possible option is to move toward an asset-based service model. This includes maintaining a skilled IT staff offshore that will develop new services based on the requirements defined by business analysts onsite. The onsite business analysts will simply install those services at the client's place. This option can provide significant revenues but at lower margins. A strategy relying on this option will take the vendor down-market toward small and medium businesses. However, there is a great deal of local and national competition at this level. Further, client loyalty probably will be based on cost factors.

I believe that the stronger course for Cognizant would be to pursue the first option. As was seen saw in the last section in the Market Analysis chapter, IT is going to be an integral part of business and can provide real business value beyond just being a utility. Cognizant might want

to pursue the work that aligns IT more closely with business and helps improve the business processes. This type of strategic choice of work could help Cognizant stay closer to its clients and acquire higher margins. The second option is more similar to the TCS model, in which firms compete on cost but have the potential to bring in much new business.

Assuming Cognizant pursues the first option, they will need to continue being selective in pursuing new clients. Cognizant should demonstrate tangible business impact through their IT-related services with existing clients, and use reference accounts to attract new clients that are willing to partner with Cognizant to seek high quality, high impact IT work. This approach will allow Cognizant to stay lean, build their internal capabilities around business challenges for their clients and increase their service offerings' "stickiness" significantly.

7.5 Recommendations for future research work

Further work in this area would be to explore the role of C2 over a period of years in promoting a pattern of collaboration among employees and with clients. A significant corner will be turned in the maturation of C2 when Cognizant learns how to achieve a balance between client sharing and client privacy. It will be useful to measure the success of C2 on various business metrics, and benchmark against industry averages.

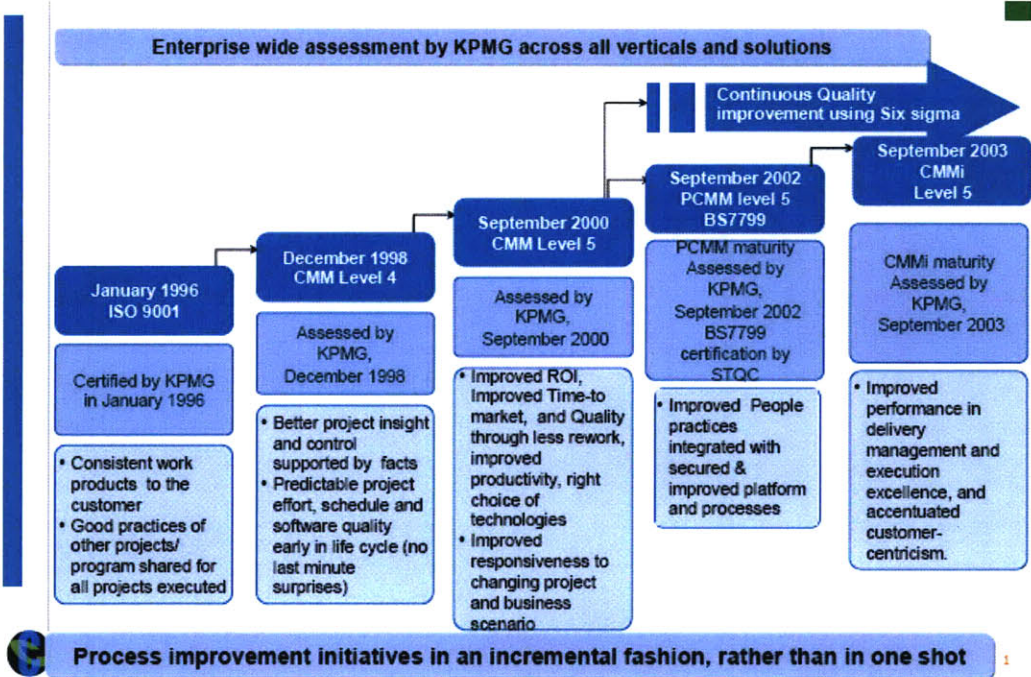
Another area to explore would be the diffusion of this innovation among not only firms involved in the outsourcing of IT services, but also PSFs engaged in other types of services such as accounting, law, and strategy consulting. A comparison of the tools' capabilities may serve to explain the differences between pure practice-based and product-heavy firms.

The third area to explore would be the measurement of the effectiveness and benefits of the usage of the "right side of the brain". If firms are able to harness this tacit knowledge and

institutionalize it, Cognizant will achieve a competitive advantage that will be very difficult to match or exceed.

Appendix

Appendix A - Cognizant's process improvement journey



Source: Company document.

Appendix B - Gartner's Magic Quadrant - Criteria and definitions

Inclusion and Exclusion Criteria

The criteria for inclusion of service providers for these Magic Quadrants are based on a combination of qualitative and quantitative measures.

Quantitative Criteria for the 2008 Offshore Application Service Magic Quadrants:

- Service providers whose application-related IT services revenue is a minimum of \$200 million in North America
- Service providers whose application services revenue delivered in an offshore/nearshore model (Gartner's GDM definition) is a minimum of \$100 million in North America
- Service providers with a minimum of 30 offshore application services clients within the given region
- Service providers with a minimum of 2,000 offshore application services head count

Qualitative Criteria:

- Overall market interest and visibility as determined by serious consideration for selection from enterprise clients
- Gartner analyst interactions that reveal interest in specific service providers for offshore/global service delivery
- The service provider serves multiple industries with a broad base of application services
- Gartner analysts evaluate service providers on the quality and efficacy of the processes, systems, methods or procedures that enable IT provider performance to be competitive, efficient and effective, and to positively affect revenue, retention and reputation.

Ultimately, service providers are judged on their ability to successfully capitalize on their vision.

Evaluation Criteria

Ability to Execute

- **Product/Service:** Core goods and services offered by the vendor that compete in/serve the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.
- **Overall Viability (Business Unit, Financial, Strategy, Organization):** Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood of the individual business unit to continue investing in the product, to continue offering the product and to advance the state of the art within the organization's portfolio of products.
- **Sales Execution/Pricing:** The vendor's capabilities in all pre-sales activities and the structure that supports them. This includes deal management, pricing and negotiation, pre-sales support and the overall effectiveness of the sales channel.
- **Market Responsiveness and Track Record:** Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.
- **Marketing Execution:** The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional, thought leadership, word-of-mouth and sales activities.
- **Customer Experience:** Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

- **Operations:** The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Table 1. Ability to Execute Evaluation Criteria

Evaluation Criteria	Weighting
Product/Service	High
Overall Viability (Business Unit, Financial, Strategy, Organization)	Standard
Sales Execution/Pricing	Standard
Market Responsiveness and Track Record	High
Marketing Execution	Standard
Customer Experience	No rating
Operations	High

Source: Gartner (November 2008)

Completeness of Vision

- **Market Understanding:** Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen and understand buyers' wants and needs, and can shape or enhance those with their added vision.
- **Marketing Strategy:** A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the Web site, advertising, customer programs and positioning statements.
- **Sales Strategy:** The strategy for selling product that uses the appropriate network of direct and indirect sales, marketing, service and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.
- **Offering (Product) Strategy:** The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature set as they map to current and future requirements.
- **Business Model:** The soundness and logic of the vendor's underlying business proposition.
- **Vertical/Industry Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including verticals.
- **Innovation:** Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.
- **Geographic Strategy:** The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.

Table 2. Completeness of Vision Evaluation Criteria

Evaluation Criteria	Weighting
Market Understanding	High
Marketing Strategy	Standard
Sales Strategy	Standard
Offering (Product) Strategy	High
Business Model	Low
Vertical/Industry Strategy	High
Innovation	Standard
Geographic Strategy	Standard

Source: Gartner (November 2008)

Leaders

Leaders are performing well, have a clear vision of market direction and are actively building competencies to sustain their leadership positions.

Challengers

Challengers execute well for the portfolios of work they select, but have a less-defined view of market direction. Consequently, they may be the next generation of service providers, or they may not be aggressive and proactive enough in preparing for the future.

Visionaries

Visionaries articulate important market trends and directions. However, they may not be in a position to fully deliver and consistently execute. They may need to improve their optimization of service delivery.

Niche Players

Niche players focus on a particular segment of the market, as defined by such characteristics as functional area, vertical industry, client size or project complexity. Their ability to execute is limited to those focus areas and assessed accordingly. Their ability to innovate may be affected by this narrow focus.

Appendix C - Industry verticals supported by TCS, Accessed from TCS website on 04/19/09

Banking & Financial Services

With a wealth of experience partnering the world's leading banks and financial institutions, and a comprehensive range of services and solutions, TCS is the partner that gets clients results: optimized investments, enhanced operational efficiencies, minimized risk, and sustained cost leadership.

Energy, Resources & Utilities

Oil, Gas and Renewable Energy

Construction

Metals & Mining

Utilities

Government

The Government Practice at Tata Consultancy Services (TCS) brings a proven track record of delivering complex IT solutions to meet government's demanding business needs. Additionally, we have deep and broad expertise in the areas of labor and workforce, criminal justice, education, and taxes.

Healthcare & Life Sciences

With an experienced team of over 3,500 professionals including biomedical engineers, computational chemists, biologists, pharmacologists, physicians, validation specialists, IT architects and management consultants, TCS understands your business objectives and helps you achieve and exceed them.

High Tech

TCS with its experience in engineering, innovation and IT solutions, a comprehensive portfolio of services partners with High Tech enterprises to provide end-to-end solutions to help them achieve product innovation, operational excellence and greater profitability thereby attaining market leadership.

Insurance

Industry consolidation, regulatory pressures, shifting demographics and shrinking margins have increased pressure on enterprises in the insurance industry today, spotlighting innovative product development, streamlined processes and business agility – precisely the strategies that TCS can help you implement.

Manufacturing

Rapid globalization, diversification, and intense competition have resulted in the need to increase agility and collaboration across geographies. TCS helps manufacturers adopt the right technology-enabled solution to

connect extended supply chains, reduce product development time, improve product differentiation, provide real time business insight, and lower operational costs.

Media & Information Services

Today Media and Information Services companies are responding to changes by cutting costs and transforming business models in order to adapt to the digital age. By working in partnership with us, you'll be ready to take control of your digitization, and ensure your own people focus on areas of strategic value.

Retail & Consumer Products

The Retail and Consumer Product industries operate in environments that are highly dynamic, with new challenges and opportunities emerging constantly. TCS' fast-growing Retail and Consumer Products Industry Services Unit offers a fully integrated organization that embeds end-to-end capabilities to help you achieve success.

Telecom

TCS understands how to leverage convergent applications, networks and content to transform your business, and can help you determine the best ways to provide single connectivity and an integrated user experience in the face of constantly shifting demands and technologies.

Appendix D - Service offerings by TCS, Accessed from TCS website on 04/19/09

IT Services

Custom Application Development
Application Management
Migration & Re-engineering
System Integration
Testing
Performance Engineering

IT Infrastructure Services

Infrastructure Readiness Assessment
IT Service Desk
Data Center Management
End User Computing Services
Database Services
Application Management Services
Command Center Services
Managed Security Services

Enterprise Solutions

Supply Chain Management
Master Data Management
Customer Relationship Management
RFID
Call Management
Oracle
SAP

Consulting

Business Consulting
IT Consulting
Business Solutions

Business Process Outsourcing

Customer Interaction Management (CIM)
Finance and Accounting

Human Resources Outsourcing
Knowledge Process Outsourcing
Supply Chain Management
Reconciliations
Benefits Administration
Payroll
Industry-specific Offerings

Business Intelligence & Performance Management

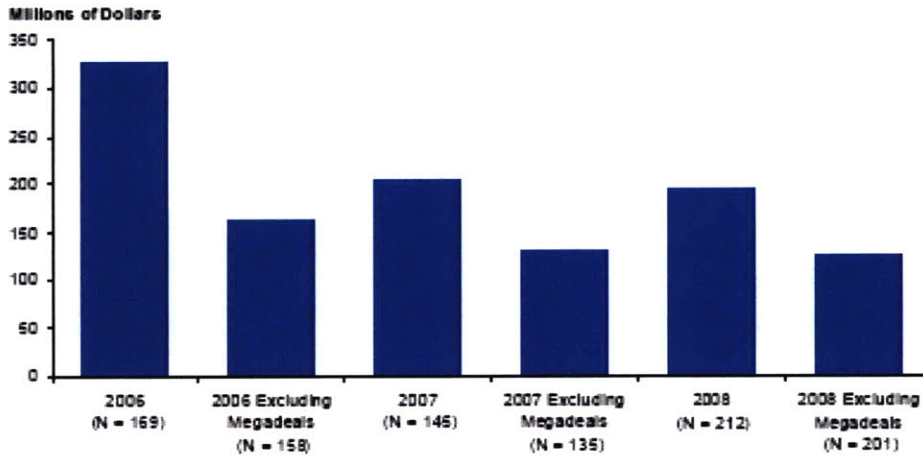
Business Intelligence
Business Process Management
Enterprise Data Management
Integration Services
Knowledge Management / Enterprise Content Management

Engineering & Industrial Services

New Product Development Solutions
Product Lifecycle Management
Plant Solutions & Services
Geospatial Technology Solutions
Industry-specific Offerings

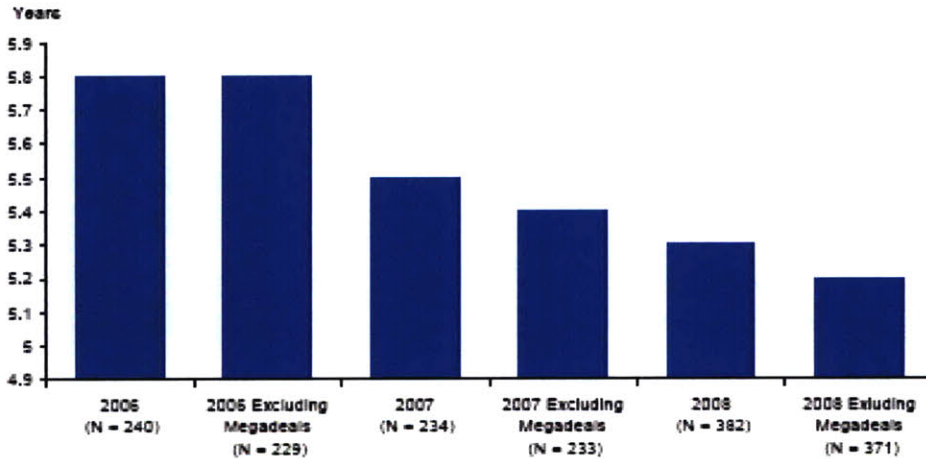
Appendix E - Average deal size and average length of contract - Gartner report on Outsourcing Contracts Annual Review, 2008. Dated 9 April, 2009. ID G00166871

Figure 6. Average Size of Deal, 2006-2008



Source: Gartner (April 2009)

Figure 7. Average Length of Deal, 2006-2008

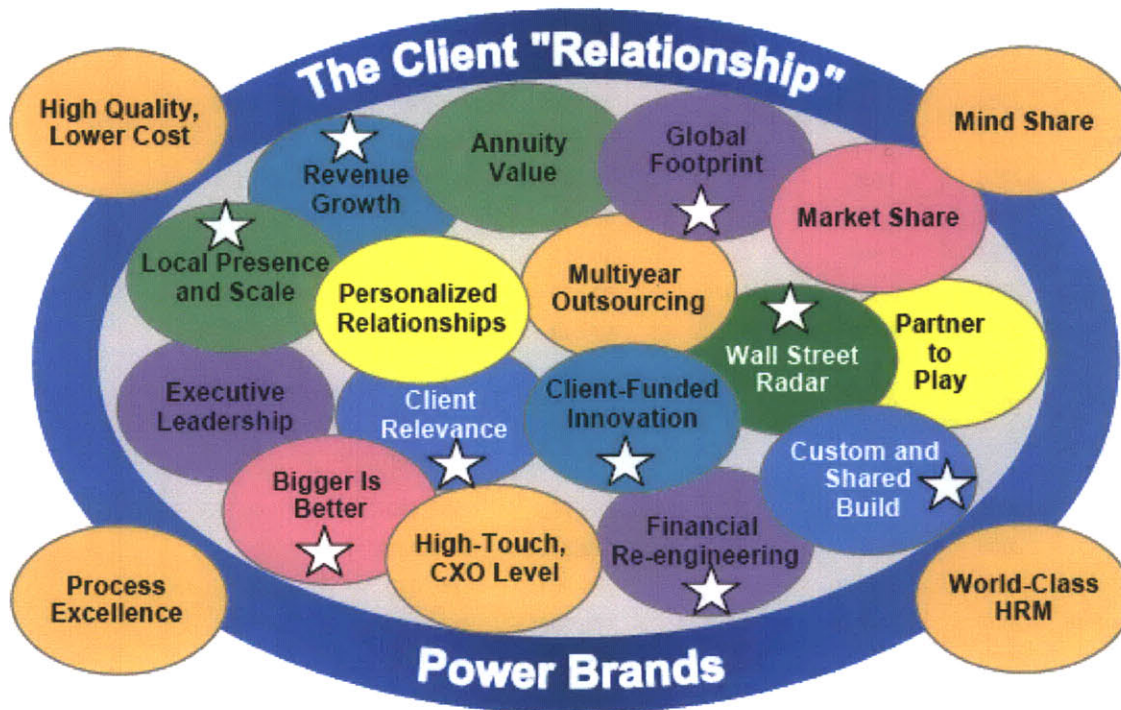


Source: Gartner (April 2009)

Appendix F - Factors leading to Mega vendor designation: Gartner report on 'India-3'
Are the Emerging Megavendors, ID G00158585, July 2008

Today's leading — that is, largest by revenue — IT services providers (IBM, Accenture and EDS) have achieved megavendor status by performing consistently on a number of parameters (see Figure 1). Through excellence in those various parameters, ranging from having an impressive depth and breadth of services, to strong executive leadership and personalized client relationships, these companies have a commanding brand positioning in the global IT services marketplace, and are often seen as de facto contenders for the largest and most-complex service deals.

Figure 1. Factors for IT Service Leadership



Acronym Key: HRM — human resource management

Source: Gartner (July 2008)

Appendix G - Mega vendor financial data - Gartner, Report ID: G00158585, dated 3 July

2008

Table 1. Statistics for Emerging and Current Megavendors (Service-Related Statistics Only)

Company	Year End	Revenue (Millions of Dollars)	Growth Rate	Head Count	Revenue per Employee (Dollars)	Market Cap (Millions of Dollars)
TCS	2007	5,718	32.45%	111,407	51,320	27,800
	2006	4,317	44.89%	89,419	48,280	29,294
	2005	2,979	33.31%	66,480	44,820	19,747
	2004	2,235		45,715	48,890	13,240
Infosys	2007	4,176	35.15%	91,187	45,800	23,563
	2006	3,090	43.59%	72,241	42,770	29,101
	2005	2,152	35.18%	52,715	40,820	19,250
	2004	1,592		36,750	43,320	12,156
Wipro	2007	3,393	37.94%	82,122	41,310	17,388
	2006	2,459	35.50%	67,818	36,260	19,187
	2005	1,815	34.09%	53,742	33,770	13,913
	2004	1,354		41,857	32,340	11,651
IBM Global Services	2007	54,144	12.12%	368,558	146,910	149,744
	2006	48,291	1.86%	355,766	135,740	146,355
	2005	47,407	2.43%	329,373	143,930	129,381
	2004	46,283		329,001	140,680	—
Accenture	2007	21,453	17.69%	170,000	126,190	23,951
	2006	18,228	6.63%	140,000	130,200	18,647
	2005	17,094	13.10%	123,000	138,980	15,076
	2004	15,114		103,000	146,730	14,312
EDS	2007	22,134	4.07%	139,000	159,240	9,483
	2006	21,268	7.65%	118,000	180,240	14,389
	2005	19,757	-0.53%	119,000	166,030	13,913

Appendix H - List of development centers, types of services offered, and industry verticals supported by Cognizant

Refer to Locations section on About Us page, <http://cognizant.com/html/aboutus/locations.asp>

Refer to Services section on Solutions page, <http://cognizant.com/html/solutions/landingPage.asp>

Refer to Industries section on Solutions page,
<http://cognizant.com/html/solutions/landingPage.asp>

Development Centers	Types of services	Industry verticals
8 in India (different cities)	Advanced Solutions Delivery	Banking & Financial
Argentina	BPO	Manufacturing & Logistics
China	Business Consulting	Retail
U.S	Customer Solutions Practice	Information Management
Canada	Data Warehousing & B.I	Media & Entertainment
UK	Enterprise Resource Planning	Consumer Goods
Germany	Info. Security & Privacy	Healthcare
Switzerland	IT Infrastructure Services	Telecommunications
France	Portals & Content Mgmt	Insurance
The Netherlands	Program Management	Technology
Hungary	Software App. Services	
Belgium	Supply Chain Management	
Singapore	Testing Services	
Malaysia	Usability Engineering	
Hong Kong		
Philippines		
Japan		
Australia		

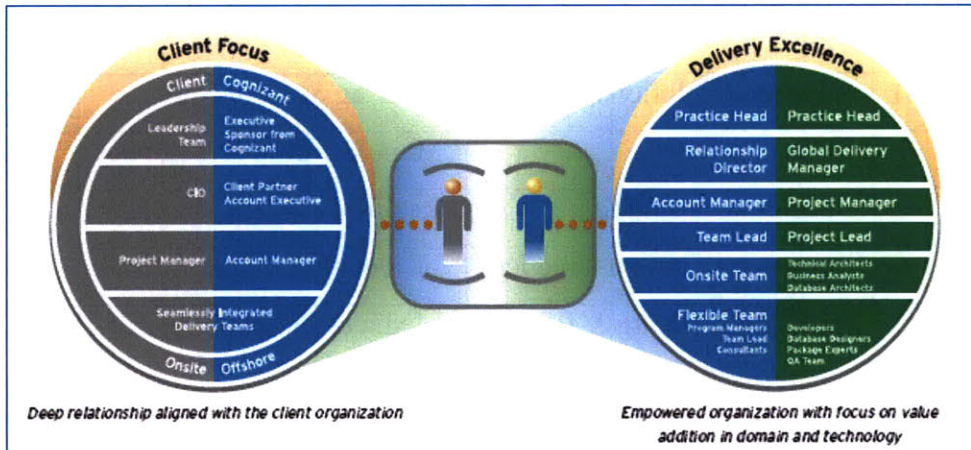
Appendix I - Cognizant's value proposition

Cognizant Corporate goal:

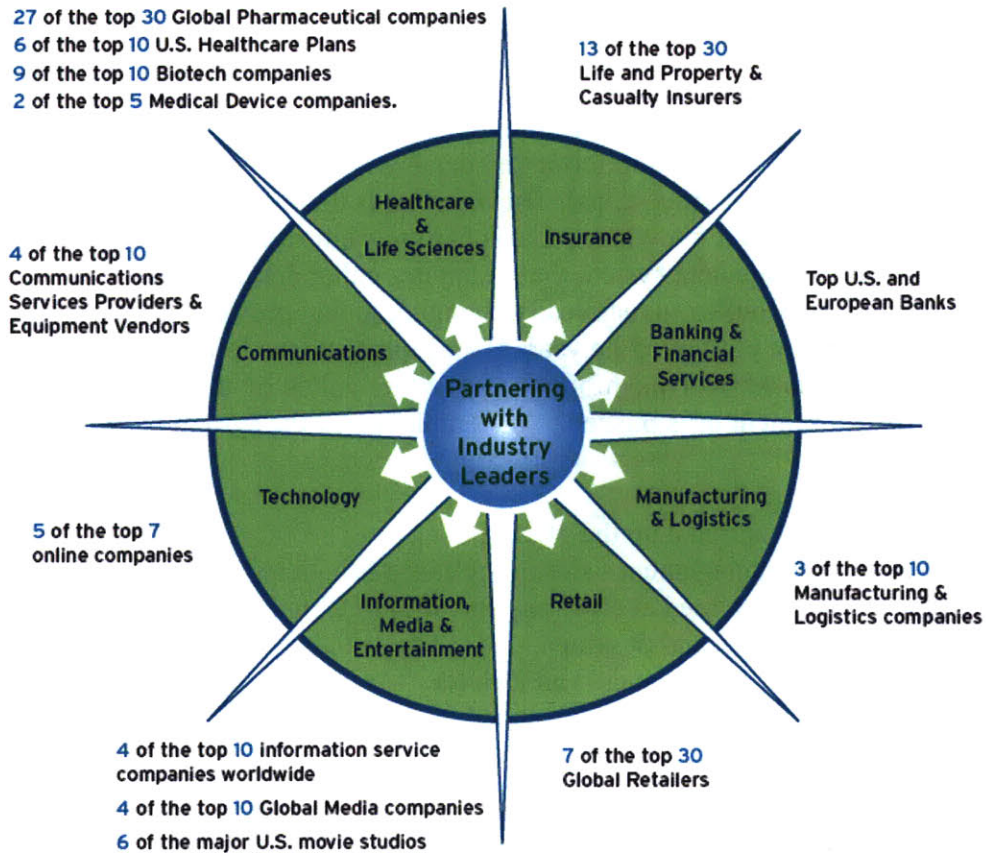
Making customer's businesses stronger by empowering them to be more responsive to their customers and to the competitive environment.

Cognizant's delivery model: Two-In-a-Box:

Cognizant's Unique Operating Model



Appendix J - Cognizant Clientele break up



Appendix K - Cognizant 2.0 - C2:

C2 has two fundamental components:

1. A high-powered knowledge management system made possible by new “Web 2.0” technologies such as blogs, wikis, instant messaging, and search engines that can comb both structured data (e.g., information in formatted databases) and unstructured data (e.g., words used in emails, audio and video clips). This represents the right side or the creative side of the brain. This is the tacit knowledge that is hard to capture and distribute.
2. A standardized project management system that facilitates collaboration and automatically coordinates complex, dynamically changing global projects. This leverages the wealth of documentation built over the years. This represents the left side or the process oriented side of the brain. This information is either pulled by the employee based on his or her requirement or is pushed to the employee by the system based on the attributes of the task.

C2 has four different components that make up the platform.

- I. Real time knowledge management - shifting reliance from a static companywide database to technologies aimed at capturing the 80% of Cognizant knowledge resident in employee heads and desktops.
- II. Real time workflow - Client Partners and Delivery Managers use software dashboards to track the progress of project and individual tasks. With roll out to clients, even client personnel have access to this tool.
- III. Real time process guidance - As we identified in the previous chapters, Cognizant is a CMM Level 5 certified firm. It has a wealth of context-specific, online-process guidance in the form of checklists, samples, and procedures that are based on the online collection and presentation of Cognizant’s best practices. C2 offers these to the project team on a need basis. Either via the pull method by the user or by the push method based on the attributes of the task.
- IV. Real time collaboration - The C2 framework encourages collaboration among the C2 community by creating a forum to solicit input and identify experts on those problems from across the firm. The person seeking the answer if does not find an answer would at least find a list of users who are seeking answer to the same or similar question. The expectation is that s(he) will then collaborate with those individuals and pursue the answer. This collaboration at this point is limited to employees, but the intention is to roll it out to the clients as well. Currently there are 40,000 people actively using C2.

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