Evolution of global service delivery capabilities in the Indian IT firms

Abstract

In recent studies, there has been much interest in the early internalization of firms and in the notion of capabilities as an important source of competitive advantage. The emphasis has been on the question of where and how capabilities emerge. The present paper is an attempt to address this question. On the basis of a longitudinal case study of the four knowledge intensive service firms from India, (early internationalizing) this study explores how different capabilities emerge and play an important role in the international growth of these firms. The study shows that developing capabilities for global service delivery is crucial for the survival and growth of these firms; these capabilities are emerging through a mix of experiential and deliberate learning processes, and continuously evolving with the changes in the environment.

Introduction

The growth of the Indian knowledge intensive service (KIS) industry has been a phenomenal success. Faced with a small and undeveloped domestic knowledge based services market, Indian KIS firms focused primarily on the international market. In the early phase of internationalization, their work was neither technologically very sophisticated nor critical to clients' businesses. In the early years, clients retained the high end work and offered only low tech work, either because they perceived that Indian firms did not possess the requisite skills to undertake these activities or, even if they did, clients did not have sufficient confidence to entrust such activities to them. Thus, the origin of the Indian KIS industry was rooted in performing low-end, technically less demanding and labor-intensive work for the global IT industry and exploiting labor cost arbitrage opportunities between India and developed country markets. But, over time, as overseas clients developed confidence in the capabilities of their Indian vendors, and the vendors in turn developed a better understanding of clients' needs, it was possible to relocate the bulk of the project development activities to India to take full advantage of its low-cost development base. Improvements in the infrastructure for long-distance communication and data transfer facilitated this process as well.

The largely untold success story of the Indian KIS industry centers on the firms who sensed the global market opportunities and took the initiatives to avail those opportunities; who learnt how to transform the programming skills of their skilled human resource, and the learned experiences from the customers into firm-specific capabilities, and leverage those capabilities to deliver a technology based business services to different customers anywhere in the world. This paper applies a longitudinal case study method to describe the evolution of capabilities in the Indian knowledge intensive service firms, and studies the factors that were important in this evolution process. The paper aims to contribute to the existing research on international new ventures by applying the notions of dynamic capabilities and organizational learning to study the evolution of dynamic capabilities in the Indian knowledge intensive firms and the extent to which they successfully apply those capabilities in their international activities.

The research gap

International business researchers agree that in order to be successful in international business, international firms should develop specific competences that are relatively unique and inimitable, in order to maximize their utility for international performance (Barney, 1991; Penrose, 1959; Nelson, 1991, Wernerfelt, 1984). Based on the notion of firm specific competencies, an assumption in most prior research is that firms go abroad to exploit strategic assets, that they command, and take advantage of market imperfections (Dunning, 1980). It is these strategic resources that the big, older, and established firms typically have relied upon to drive their performance in international markets. In contrast, international new ventures (or born globals) that operate internationally from an early stage in their development lack financial, skilled human resources, routines, and tangible resources that characterize most businesses operating internationally. These early internationalizing firms begin with a global view of international market, and in due course develop the capabilities needed to achieve their goals (Oviatt and McDougall, 1994; Knight and Cavusgil, 2004). They leverage innovativeness, knowledge, and capabilities to achieve considerable international market success (Knight and Cavusgil, 2004). As firms managerial time and efforts are scarce and firms need to allocate these recourses among initiatives to acquire relevant capabilities, then it is important to know the specific capabilities and their influence on the firm's international performance. Yet, little is known about (1) how capabilities evolve in the INV firms (Easterby-smith, Lyes, and Peteraf, 2009), and (2) what are those specific capabilities early internationalizing firms need to successfully enter and grow in international markets (Zahra et al. 2000; Ethiraj, et al. 2005).

It is also important to note that, the majority of studies on born globals or early internationalizing firms have focused on the exporting activities of manufacturing firms, particularly those manufacturing technology-based products and very little attention has been paid on the international knowledge intensive service firms. As prominent businesses expand their operations globally to satisfy investors' desires for growth and superior performance, the demand for support services in these operations, such as enterprise resource planning (ERP), decision support system (DSS) development, business process management (BPM), etc. increases (Hitt, Uhlenbruck, and Shimizu,

2006). This phenomenon has given rise to the demand of support services also referred as outsourcing business. In this paper such support service providing firms have been identified as knowledge intensive service firms, which is more than outsourcing. These service firms follow their clients into international markets to service their clients growing needs. In this way service firms facilitate the growth of multinational enterprises (MNEs) by providing specialized services, and at the same time they also get opportunities to expand internationally. Service firms especially knowledge based service firms, differ from industrial firms in the sense that their services are highly customized and customer focused. Although the service requirements may differ from one client to another, through the process of service development and delivery, these firms are able to build a knowledge base of the business domain they are serving in. Also they are developing a strong understanding of their clients' activities, both from business and behavioral perspectives. These capabilities in turn are enhancing the quality of the services being provided to the clients, while simultaneously reducing the costs of providing those services (Ethiraj, et al, 2005). These capabilities can also be useful in internationalization of knowledge services to other markets, where these capabilities can be successfully applied or integrated with the local ones to gain competitive advantage (Eriksson et al. 1997). Yet, little research has explored the process of developing and leveraging capabilities, critical for the internationalization process of knowledge intensive service firms. These gaps in exiting literature indicate that our understanding of the knowledge intensive service firms going international shortly after their inception is still limited. And therefore in this study I seek to advance the understanding of the knowledge intensive service firm's internationalization process. More precisely, critical *Capabilities* necessary for the survival and growth of these firms are identified and it is explained *how* these capabilities evolve over the period and have an effect on the international performance of knowledge intensive service firms.

Literature review:

Capabilities and its importance in the internationalization process:

Penrose (1959) conceptualizes firm as a bundle of physical and human resources whose productive services are released and made cohesive within and by specific administrative

framework. She makes a clear distinction between the resources and the services of resources. As resources are not self sufficient reason for a competitive advantage but how they can be applied through processes determine the advantage. It also means capability to deploy resources productively is not uniformly distributed. Building upon this and other earlier works, recent literature on the resource-based view conceptualizes recourses and capabilities along two lines. One set of researchers tends to define resources rather broadly so as to include all assets, capabilities, organizational processes, firm attributes, information knowledge etc. controlled by a firm that enable it to conceive and implement strategies efficiently and effectively (Barney, 1991:101). While other researchers make a clear distinction between the resources and the capabilities, by arguing that resources consist of assets, know-how that can be traded (e.g., patents and licenses), financial or physical (e.g., property, plant and equipment), human capital etc., whereas capabilities differ from assets in that they cannot be given monetary value, as can tangible plant and equipment, and are so deeply embedded in the organizational routines and practices that they cannot be traded or imitated (Dierkx and Cool, 1989; Amit and Schoemaker, 1993). More distinctively, capability refers to the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources, usually in combination, for the purpose of achieving a particular end result (Helfat and Peteraf, 2003: 999). Capabilities are complex bundles of skills and accumulated knowledge, exercised through organizational processes that enable firms to coordinate activities and make use of their assets (Teece, Pisano, and Shuen, 1997). Unlike resources, capabilities are based on developing, carrying, and exchanging information through the firm's human capital. Capabilities and organizational processes are closely entwined, because it is the capabilities that enable the activities in a business process to be carried out. And the business will have as many processes as are necessary to carry out natural business activities.

Recently scholars have extended the resource based view to dynamic markets and contested that RBV has not adequately explained how and why certain firms have competitive advantage in situations of rapid and unpredictable change (Teece, Pisano and Shuen, 1997; Eisenhardt, and Martin, 2000). Industry observers have found that the winners in the global marketplace have been firms that can demonstrate timely

responsiveness and rapid and flexible product innovation, coupled with the management capability to effectively coordinate and redeploy internal and external competencies (Teece, Pisano and Shuen, 1997). These observations have led to the birth of the concept "Dynamic capabilities". The most recent definition of dynamic capability thus incorporates the market dynamism. Teece et al. (1997) define the concept of "dynamic capabilities" as "the firm's ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments" (p. 516). According to Teece et al. (1997, p.517) competencies and capabilities are intriguing assets as they typically must be built because they cannot be bought. They are nurtured, reconfigured, and reconstituted by persons in the firm. Subsequent work on this topic has expanded the original definition, such as by Eisenhardt and Martin (2000) who defined dynamic capabilities as "the firm's processes, such as product development routines, alliance and acquisition, resource allocation routines, and knowledge transfer and replication routines, that use resources to match and even create market change". Other researchers have taken a different view such as Zollo and Winter (2002) define dynamic capabilities in terms of routines, a central feature of evolutionary economics (Nelson and Winter, 1982). Thus it can be seen that scholars coming from different research traditions have viewed dynamic capabilities with different lenses (Smith, Lyes, and Peteraf, 2009). Most recently, some progress in this direction has been made by a group of scholars and they define dynamic capabilities as the *capacity of an organization to purposefully create, extend, or modify its resource base* (Helfat et al. 2007), p.4). This definition accommodates both Teece, Pisano and Shuen's (1997) view that dynamic capabilities enable a firm to respond to environmental change as well as Eisenhardt and Martin's (2000) broader notion that they can also be the source of disruptive change. It leaves open the possibility that they may address or bring about organizational changes unrelated to environmental change. It also clarifies that a direct association between competitive advantage and dynamic capabilities is tautological, but at the same time they reject the view that dynamic capabilities are nothing more than best practices, with equifinal effect on performance, as argued by Eisenhardt and Martin (2000).

The dynamic capabilities view that has evolved from the static resource-based view (RBV) of competitive strategy provides a theoretical foundation to capture

evolution of firm capabilities. The dynamic capabilities view suggests that the firm needs to develop new capabilities to identify opportunities and respond quickly to them. In other words, dynamic capabilities are responses to the need for change or new opportunities and the changes can take many forms: they involve transformation of organizational processes, allocation of resources, knowledge development and transfer, and operations (Easterby-smith, Lyes, and Peteraf, 2009). The changing allocation and utilization of resources is a critical part of dynamic capabilities. These resources can include human capital, technological capital, knowledge based capital, and tangible asset based capital among others (Easterby-smith, Lyes, and Peteraf, 2009). Dynamic capabilities can improve over time, decay or remain unchanged even as they continue to induce change. Furthermore, scholars suggest that organizations can have several different kinds of dynamic capabilities such as idea generation capabilities, market disruptiveness capabilities, new product development capabilities, marketing capabilities, or new process development capabilities. The consequences of these capabilities are not directly observable and have to be inferred from other indicators. For example, Bruni and Verona (2009) emphasize the importance that marketing capabilities play in new product development in pharmaceutical firms. They emphasize that dynamic marketing capabilities involve processes of knowledge dispersion, social network building, and integration with other processes. In summary, dynamic capabilities can take a variety of forms and involve different functions, such as marketing, product/process/service development, but the overriding common characteristics are that they are higher level capabilities which provide opportunities for continual upgrading of various processes, interaction with the environment and decision –making evaluations.

The above explanation of dynamic capabilities suggest something about what dynamic capabilities are for and how they work, but it leaves open the question from where they come from (Ethiraj, et al. 2005).

Organization learning and the evolution of capabilities

Organizational learning is a key building block for new capabilities. Learning is a process through which organizations encode experiential inferences into behavioural routines. Taking it forward, Zolla and Winter (2002) focus on organizational learning as a source

of dynamic capability, which they define as "a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness". Zolla and Winter (2002) posit that capabilities are not merely the result of tacit accumulation of experience embedded in routines and learning by doing. They are also the result of deliberate investments in organizational structure and systems to make constant improvements in those routines and practices. Particularly in the context where technological, regulatory, and competitive conditions are subject to rapid changes, persistence in the same operating routines quickly becomes hazardous. Zolla and Winter (2002) contest that behavioural tradition in the study of organizational learning consist of lack of appreciation of the deliberative process through which individuals and organizations figure out what works and what does not in the execution of certain organizational task. According to them important collective learning happens when individuals express their opinions and beliefs, engage in constructive confrontations and challenge each other's viewpoints. And organizational competence improves as members become aware of the implications of their actions. Another important part of this deliberate learning mechanism is the codification of knowledge. Individuals codify their understanding of the problem such as software codes or process models. Zolla and winter (2002) think that codification of knowledge is an important and relatively underemphasized element in the capability building picture. The literature on knowledge management has emphasized that the codification facilitates the diffusion of existing knowledge (Zander and Kogut, 1995; Nonaka, 1994) as well as the coordination and implementation of complex activities. Codification therefore is potentially important as a supporting mechanism for the entire knowledge evolution process not just the transfer phase.

Internationalization as a learning process:

The importance of market experiential knowledge in the internationalization process has been well captured in the internationalization process model of Johanson and Vahlne (1977). The model proposes that the firm's learning process shapes its internationalization behavior. Thus it is the firm's activities in a market that is of importance to the firm's learning process because it provided the firm with the

experiential knowledge (Penrose, 1959). The concept of international market experiential knowledge was further developed by Eriksson et al. (1997) into the following three different types of knowledge: *internationalization knowledge, business knowledge,* and *institutional knowledge*. Eriksson and his colleagues (e.g., 1997) have argued that the initial market perspective on experiential knowledge is too limited a conceptualization and that it forgoes the broader explanatory character of experiential knowledge, as discussed in Johanson and Vahlne (1977). They argue that business knowledge and institutional knowledge are market specific, gained within that particular market, but the accumulated experience in internationalization is neither specific to a country nor a mode of entry. Experiential internationalization knowledge is a firm's experience of organizing internationalization, means what is required in different situations and different setting connected with internationalization and where to seek this knowledge. Acquiring international experience in several countries will allow firms to develop rich stock of knowledge (Ghoshal, 1987). Subsequently firms will learn how to handle a variety of issues when conducting business in foreign markets. Erramilli (1991) found that an increase in international experience also leads to entries into markets that are culturally more remote. The development of new market knowledge is important for success in international markets (Bartlett & Ghoshal, 1987). This knowledge influences a venture's ability to adapt its products to local market conditions, capitalize on market dynamism through rapid new product developments, and identify emerging technological changes that can influence firm performance. According to evolutionary economics (Nelson and Winter, 1982), the superior ability of certain firms to create new knowledge leads to the development of organizational capabilities (Wu, Sinkovics, Cavusgil, & Roat, 2007), consisting of critical competences and embedded routines and firms prepare for international venture by developing an appropriate set of competencies (Knight and Kim, 2009).

Research Method:

The nature of my research objective provides a ground to opt for a case study research approach. I chose a longitudinal multiple case study approach (Eisenhardt, 1989; Yin, 1989) consistent with the evolutionary and interpretive nature of analyses and the prior

research on the capability dynamics (e.g. Laamanen and Wallin, 2009). I studied four knowledge intensive service firms and their evolution from their establishment (1981, 1987, 1991, and 1999) to the current state. An overview of the selected firms is presented below at the end of this section. The research focuses on the different internationalization capabilities these firms have been able to develop over the period of time. The companies were established in different segment of the knowledge intensive service industry. Choosing firms that were similar in many aspects made it possible to go deeper in elaborating the capabilities, however they were different in many ways.

When I started my analyses, I had already collected an extensive amount of pre-study material on the four knowledge intensive service firms. I had access to internal analyses reports project reports, and customer feedbacks, generated during their different phases of evolution. The top managers and founders had also participated in various video-recorded events, such as at seminars, university lectures, and conferences to tell their firm's stories and what they had been thinking at different points in time. Many of these video appearances provided valuable archival material on the evolution of the firms. Since the four firms have been very visible in the economy, with high growth expectations, there is an extensive archive of public presentations and newspaper articles on the four case firms. The firms also communicate actively with their stakeholders and prospective clients through the website and news releases. An analysis of over 35 project reports, accompanied by an analysis of 10 annual reports, provided a solid basis for examining the early and post internationalization periods. Retrieving these events and records provided an excellent way to go back in time in the firms' historical thinking. Through this process the research focus was on how these firms made sense of the external situation and how this affected capability development process during the different stages of the firm's evolution.

In order to collect the primary evidence, I carried out two rounds of interviews. The first round was conducted in June/July 2009. At that stage, I interviewed senior level managers, allowing them to tell his firm's story freely. These interviews lasted between one and two hours. Later on I expanded the interviews to comprise a total of 20 individuals who had been involved as project managers and engineers with the four companies. I had the opportunity to interview engineers at offshore (Bengaluru,

Hyderabad,) and onshore (Stockholm, Brussels) sites. In the first round of interviews, notes were taken which were used to draft interview reports. These reports were then further sent back to the interviewees of the respective case companies, allowing them to comment on the correctness of my interpretations. The second round of interviews was carried out in January/March 2010. These interviews were semi-structured and done over the telephone and Skype. The interviewees received a set of open-ended questions that probed the underlying reasoning in the different stages of their firm's evolution, challenging them to elaborate on the reasons for the emergence of different kinds of capabilities and their significance to the firm's international operations. At this follow-up stage my own interpretations were confirmed by the follow-up interviews from the two firms, I relied on the publicly available material and insights gained in the interviews with the management teams of the other firms. At this stage, I also complemented my interviews with a more structured text-based analysis of the customer experience cases reported by the four case firms in order to provide further validation of my interpretations.

Case analysis:

Table I summarizes the analysis process applied in this research. First I analyzed the data by developing case histories (Brown and Eisenhardt, 1997). On the basis of the data collected through interviews, founders' video presentations, and feature articles about the four firms, I wrote case histories of each firm, describing their evolution over time. I used the case histories in thematic analysis to establish the overall timeline and to understand the main patterns of development. In the next stage, I analyzed the various activities that the companies reported in their press releases and website updates. These included new service introductions, business alliances, sales successes, organizational restructuring, acquisitions, and divestments. Altogether, I selected 33 press releases covering the most active parts of the firms' histories. I coded these press releases according to management's reasoning provided in the press releases and the operational capability areas. While initially I categorized the capability areas according to the literature on capabilities, I kept the categories relatively loose, allowing the final capability categories to emerge from the data. Thus, although the literature tends to favor entirely open coding according to

instances of observation (Rindova and Kotha, 2001; Strauss and Corbin, 1990), I felt that some initial categories were needed because of the abstract nature of the capability concept.

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The third stage of my analysis focused on uncovering the interrelationships between environmental changes (outsourcing, technology innovation, skilled human resources, Y2K bug, terrorist attack on USA, and other events), opportunity discovery, and capability development. As the different interviewees explained their views of the company's evolution, it was possible to start drawing inferences between the reasoning by management, the subsequent actions of the firm, and the resulting capabilities. The timeline and sequence of events helped the interviewees pinpoint the time at which a certain event had occurred, making it easier for them to explain how and why the company had acted. The information provided in the first round of interviews enabled me to develop understanding on how management's emphasis shifted from one capability category to another, depending on the area which was perceived as the next most important or the next bottleneck.

An overview of the four cases:

Case 1: MTL is an international Information Technology consulting and implementation company that delivers business solutions through global software development. MTL is structured into two business units that focus on software development – R&D Services and IT Services. MTL was started in 1999 by 10 industry professionals who came from three different nations and had already scripted successful careers. Among them 7 were leaders in the Indian IT business and 3 leaders in American IT business. They came from Cambridge Technology Partners, Lucent Technologies and Wipro. The founding team was led by the person who was at that time vice chairman and president of Wipro, one of India's largest software companies. By 2010 the company had revenue of $ 272.3 million USD and strength of 9012 employees. MTL's regional headquarters (co-headquarters) are in Bangalore, London, and Warren (New Jersey), 3 development centers in India, and 15 offices spread across Asia, Europe and the United States, in New Delhi, San Jose, Texas,

Washington, Schaumburg, McLean, Denver, Mumbai, Chennai, Frankfurt, Cologne, Singapore, Tokyo, Sharjah, Miami, Sydney and Sweden.

Case 2: Firm EH is a leading global provider of IT and BPO services, focusing on delivering business results from technology solutions and specializing in Business Intelligence, Business Analytics, Enterprise Applications, HR-IT and Legacy Modernization. Founded in 1990 "EH" today maintains seven state-of-the-art development centers - four in India and one each in Germany, USA and Mexico, and offices in North America, Europe and Asia Pacific, and employs around 5200 workers globally. By 2009 EH's revenue had reached US$ 52.12 million.

Case 3: Firm DS is a leading software services exporter, was founded in 1987, by a MBA from Ohio University. He started the firm with 20 employees and bagged multitude of IT projects from US companies. Today the firm has more than 52,000 employees and it competes with local players such as Tata Consultancy Services and Wipro Technologies as well as global majors such as IBM and Accenture for knowledge outsourcing deals. DS's global clients include General Electric, Nestle, Qantas Airways, and Fujitsu. It specializes in business software, and offers back-office outsourcing and consulting services. DS's network spans in 55 countries, across 6 continents, has development centers in India, USA, UK, UAE, Canada, Hungary, Singapore, Malaysia, China, Japan and Australia and serve over 558 global companies, including over 163 Fortune 500 corporations.

Case 4: Firm AI was formed in the year 1981, by seven engineers, and registered in India, with an initial capital of Rs. 10,000 (approx. US$ 250 in current market value). Today AI is a NASDAQ listed global consulting and IT Services Company with more than 104,000 employees. From a capital of US$ 250, it has grown to become a US$ 4 billion company with a market capitalization of approximately US$ 14 billion. It has offices in 22 countries and development centers in India, China, Australia, UK, Canada and Japan.

Findings

Evolution of global service delivery capabilities:

In the beginning firm AI had to face several challenges in finding customers abroad. The concept of working with an IT services firm based in India and run by Indian engineers was new to the western clients of the firm AI. The firm had to first establish its credibility by demonstrating its capabilities in maintaining systems that were not mission critical. After firm AI had proven itself, clients began asking the company to handle more critical tasks and to take on the development of custom tailored software applications from scratch. This was an opportunity for firm AI to learn and develop skills on handling projects, as firm AI did not have those skills. Firm AI took on more and more critical work, and its profit margins rose. But the challenge was to keep the service delivery cost minimum. To reduce the cost of travel of engineers from India and leverage a vast pool of talented, technologically savvy, English-speaking engineers in India, firm AI began to experiment with a radical change in the way it was operating. It was also necessary for the company to adopt the change in the global security environment as post 9/11 terrorist attack obtaining visas for Indian engineers were becoming increasingly difficult. The company began moving some of the project work from the client site to a distant location in India. Early attempts to handle projects from a distant location far from the client's site achieved only limited success. Data links between the United States and India were essentially unavailable, so firm AI sent software code back and forth by courier and fax. Because clients demanded tight timelines, Firm AI teams could not simply remain idle during communication delays. Programmers on site and in India worked on the same software application in parallel. Ensuring that the portions of software codes developed in each location were consistent. Firm AI later called this arrangement a global delivery model (GDM). But this arrangement had its own challenges. During the testing phase of software development project it was almost impossible for Firm AI to shift work offshore. Tests needed to be conducted on the client's systems, and testing required multiple iterations. The company wanted to keep the cost low, and the solution before the company was to create a simulator at its India office and test the software in a simulated environment. That time the company could not afford a mainframe system so simulators

were created on PCs. In some cases, Firm AI tried to test the software by duplicating client systems in India, but this method had its own complexities. The simulations were never perfect.

As time passed, Firm AI established its first direct communications link to the United States in 1989. AI's direct communication link was a big support for the delivery system. At the same time some global political and economic changes were taking place at dramatic pace and these changes turned out into the favor of the company. In the early 1990s, Indian government began a deregulation of its economy and many of the previously required licenses became obsolete. After deregulation move of Indian economy, telecommunications companies made massive investments in communications links from the rest of the world to India. Costs of using these communication links declined dramatically and speed of using these links increased substantially, and the economic potential of Firm AI's Global delivery model multiplied. Now, it was possible to send software back and forth in a fraction of time. Firm A could connect to mainframe systems of their clients in the United States from terminals in India, and this enabled a new range of services to be delivered remotely, including ongoing maintenance and user support.

As early as 1990s, Firm AI started experiencing the full potential of the GDM. The first project was from the one of the largest manufacturing company in the USA, where Global Delivery Model was applied. This was one of the biggest projects they had ever worked on. It was one of the first corporate project experience in which 75 percent of the workforce was based in India. Due to the time difference it required some of the engineers to sleep in day and work in night. Because email systems were still primitive and it required constantly to be on the phone to India, clarifying customer's requirements specifications and running tests. The company managed to hit the targets in a very tight timeline. But this was great learning experience for the company. Now the company had started realizing the potential of this capability and gaining confidence in this model. This became the backbone of the firm's international growth in different geographic markets. By now the company has made considerable improvements in the system and is continuously evaluating it for improvement.

Despite the Global Delivery Model's capability (see table II) to substantially reduce costs of service development and delivery, many clients were apprehensive about this approach. They were not sure about the success of such arrangements. It was opposite to the long-established tradition of IT services professionals working on site, and therefore hard to accept. Part of their fear was rooted in the complications of dealing with a foreign, unfamiliar culture which was 12 time zones away. In spite of all these apprehensions, the Global Delivery Model soon became a formidable competitive advantage for the firm. It even delivered an unanticipated benefit in form of improved efficiency. Previously clients were approaching the firm with a loose, unstructured requirements and it required a long and time consuming process of understanding the requirements before precisely defining it, now clients were more aware of the necessity to be precise about their requirements, and this improved a software development project's efficiency regardless of where the code was written. Firm AI's growth continued through the 1990s and it begin its internationalization process to other markets. In 1993, it opened its first Europe-based sales office, followed by offices in other countries across the world. It continued to gain confidence of large companies by delivering mission critical projects timely and cost effective manner. By the late 1990s, Firm A's credibility was firmly established, and the "Y2K" bug and the Internet boom drove a dramatic growth spurt. From 1998 to 2001, revenue grew at over 80 percent per year. Firm A's strategy of using global delivery model in the North American market was proving powerful indeed and the company started leveraging its competitive position to other markets. Firm AI also began to tackle more complex projects than software development, such as helping clients manage their transitions from mainframe systems to modern new-technology platforms, and launching software solutions for specific industrial sectors such as software for banking companies. This kind of move was a result of the experience gained from the clients through previous projects.

In summary, the above case illustrates how a knowledge intensive service firm developed its global service delivery capabilities through interaction with its clients and changing environment, and internally oriented learning process to serve international clients in efficient and cost saving manner. Other firms under this study have gone

through a similar experience and they also have the global service delivery capability to serve their clients globally.

Evolution of Knowledge sharing Capabilities:

In the firm DS, global delivery model is a combination of people, process and knowledge management. Any international project is handled by a geographically distributed team. The team is arranged in a combination of onsite/onshore, near shore, or offshore project members. Projects are handled mainly by teams located remotely from client site but often a small team stays onsite. And a small number of team members travel between locations for short visits. Onsite and remote teams transfer the work packages back and forth until the task is completed. The geographic arrangement is made on the basis of expertise and knowledge that reside at various locations within the firm. An onsite team includes project members, project leaders, program manager, transition head, relationship manager, quality assurance, human resources and organization development. A similar structure is present at the remote site.

The firm DS faces some critical issues regarding this type of global delivery arrangement. Main issues are how to gain the confidence of clients in their delivery system, that is, the firm is capable of delivering quality service and in timely manner. It is also important to address the concern of clients' regarding how the knowledge of the client firm is captured by the servicing firm in a short project time period, the same knowledge is used for service development at a remote center, and delivered back in form of service. This requires knowledge gathering, transfer, and retention within geographically dispersed teams. Eliminating expertise gaps between onsite and offsite teams is particularly important for global service companies like firm DS. This is achieved by developing the same level of expertise at the remote site and its corresponding onsite team. This helps to remove the doubts of the client regarding the quality of the service. Standardized templates based on a glossary of terms are used to transfer the knowledge between onsite and offsite teams. The onsite team is responsible for codifying and documenting the knowledge on specific templates, and transferring this to remotely located teams working on the same project. The remote team then decodes the information and makes sense of it. The remote team makes it sure that the information

is clear and in case of any knowledge gap the team makes further request for information. The remote team also makes it sure that it has absorbed the knowledge and can use it in problem solving scenarios. This is achieved by developing a presentation, explaining the functionality of the application as they understand it, and is based on the information provided by the onsite team. The remote team also demonstrates its knowledge by problem solving and by day to day service to client which is scrutinized by the client.

The internal transfer of knowledge is a painstaking process. As it involves the tacit knowledge, it suffers from stickiness and communication problems. To overcome this problem firm DS has developed a glossary of terminologies and standard templates. These glossaries are widely understood and shared among the teams, which helps in minimizing misunderstandings. Also templates are carefully designed and used as standard tool for sharing knowledge. The objective is to minimize the chances of misunderstanding and maximize the clarity of the scope of the project. It is important for the project members to have a clear understanding of the project scope. The scope of the project is also communicated back to the client so that there is no deviation in the project scope. The firm DS clients are represented by business people and most of the time they do not have the technical understanding of the project scope, so it is not always possible for clients to have an objective approach towards the project efforts. Also service requirements are not always well defined and explicitly explained by the clients. Thus it is highly important for the firm DS to be very clear about the scope of the project and mutually agreed deliverables. Otherwise the firm faces high risk of project getting delayed and mostly resulting in cost escalation. This has also the potential to affect the on-going relationship between the firms DS and its client.

Initially the firm had to face several problems regarding managing the projects internationally. The onsite team had to travel back and forth several times before the project was finally delivered. But with mix of experiential and deliberate learning the firm was able to overcome these barriers in knowledge transfer between clients and the firm and within the firm. They developed the mechanism for codifying knowledge and through their learned experience are now using it as a standard tool. The codified knowledge, the technique, and the glossary of terms are unique resources of the firm and are found in the organizational routines and procedures. For team members to be able to

understand such codified knowledge they undergo training programs and therefore even without sitting together at one location they are able to share their knowledge. It is a shared mind-set of the team members of firm DS which makes this task easy. This shared mind-set is also a unique resource of the firm DS, where employees across the firm have the same level of skills in understanding and solving the problem.

Development of Knowledge retention capabilities:

Firm DS is also facing the problem of high employee turnover; it has some serious consequences on the knowledge building process of the firm. High employee turnover can lead to knowledge loss between onsite and remote service provider sites. The firm DS realized it needed to ensure that the knowledge transferred and captured by the remote teams would be retained even if the project members leave the organization. The aim was to make the individual knowledge as the organizational resource and accessible to all. The firm developed a knowledge retention technique, which is based on succession plan that combines both the process and the people dimensions. Project managers' select identify individuals who could be their successor in case the project manager leaves the project or the organization. This process ensures that the successors are trained to replace the manager and are prepared for future role. Successors are also made knowledgeable about the clients for whom the project manager was responsible and the ongoing projects. Therefore when they take over the charge they require little or no time in starting working with the existing clients or on the ongoing projects.

Firm DS has also learned from its experience that no two clients or two projects of the same client are alike, but most share certain characteristics. And, while no two people or project teams approach a solution in the same way, most can benefit from the firm's previous experience, translated into consistent approaches that improve productivity and quality and set the stage for successful solutions delivery. The codification of knowledge has positively affected on this. The firm has developed a knowledge search process for locating expertise within its vehicle for developing and sharing knowledge. This is part of the internationalization capability of the firm DS.

Similarly firm MTL is facing the problem of people attrition, and it has direct impact on the knowledge of the firm so the MTL has developed practices to manage the

loss the any such knowledge. MTL has also linked people attrition management with the knowledge management and this is implemented through the rotation mechanism of the people on projects. The program director of MTL explains it as follows: […] *we want to show our customer, that we will try to retain the person within the account to work on the some other project, or in other role within the same account, to give them different experience, we find another assignment within the account, this ensures that at least the client specific knowledge is not going outside the account, so when they get into another project within the account, their ability to learn is even quicker because they know the landscape, so there is no need to teach them again, what we do we publish people turnover out of the account and compare that with the organization people turnover, we have substantially maintained that figure lower than the overall organization, because the customer was trusting us and our work, we had mutually agreed rotation plan and the knowledge transfer process in place, we controlled it efficiently. We all agree that Knowledge should largely remain within the account.* […]*

MTL has found that the risk of knowledge loss varies from one type of work to another. As explained by the program director of MTL […] *Project life is generally small, when we talk of a large project we are talking of 6 month to 1 year, typically we have lot more people on projects in comparison to maintenance, so the risk of knowledge loss is low on projects in comparison to maintenance, and that's why importance of knowledge documentation is more important in maintenance, if somebody role is changing, what needs to be done to transfer the knowledge is all documented, there is a knowledge transfer document for each assignment, it includes knowledge of the application, the business that it does, the technical part of the application, design coding etc., We call it application handbook, which has all aspect of the application assignment, the process used in the assignment, how is configuration management done, and it is different for different assignments, so the tools and processes used, the functional aspect, business knowledge, and technical knowledge everything is documented and in the knowledge transfer document it is very well stated.*[…]

Evolution of customer relationship capabilities:

EH has a client base comprising several global organizations. EH provides solutions that translate into tangible business outcomes for their customers. EH 'partner-in-business' approach generates high business value for customers and rich dividends to EH in the form of a continual stream of repeat business. EH's head of the operations commented on the firm's customer and market understandings as follows: *"EH operates on a global platform, working with several Fortune 500 customers in North America, Europe and Asia Pacific. This gives us a unique understanding and access to not only the business practices but also the cultural and work-ethics in different regions and industry sectors. We also keep track of the technological changes, and prepare ourselves to the new challenges and opportunities. For instance in the recent financial crisis we have sensed that customers are trying to avoid large capital expenditure on IT, days are gone when customers used to spend huge money on technology, customers are looking for cost saving, technology is also driving them in that direction. Thus we have to continuously innovate in our process and methods to be able to meet the changes in customer requirements and the market. We have the ability to demonstrate adaptability and flexibility in our operations to suit the dynamic needs of our customers."*

Firm EH's customers are many times large in the size and revenue in comparison to EH and it gets reflected in the relationship behaviour with these firms. Thus EH has to adjust this factor into its moderate behaviour while dealing with its clients. For instance one customer demanded 30 people onsite for a project development, EH tried to explain that it can manage the project with 5 people onsite and can get the required support from its delivery center in India. Firm EH was quite clear about the scope and the requirements of the project and was very confident with this proposal, but the customer was not ready to accept this proposal and continued to insist on its demand. If firm EH thinks it in terms of money it would simply mean waste of resources, as it involved over expenditure on transportation and accommodation, and also these extra people might have contributed on other projects as well. As EH employees share their knowledge with their colleagues and relocation for a longer period would mean loss of this benefit. But the firm EH decided to station the number of people as per the demand of the customer. After a few weeks, as the project progressed, the client firm realised that the firm EH's recommendation was

correct and all the employees were competent in handling the project. This impression made them believe that the employees based in India are equally competent and they can rely upon them. Thus they agreed to keep only 5 people stationed onsite while the remaining employees moved back to their base. Firm EH's COO commented on this as follows: *"The Company has demonstrated capability in meeting resource and infrastructure requirements for large projects, at the same time remaining small enough for relationship comfort."*

Timely completion of any project is very important for any long term sustainable business relationship, and firm EH understands this very well. Firm EH understands that any delay in project has very high cost implications not only to its clients business but also it reduces EH's profitability. Timely completion of any project depends upon the correct assessment of the project scope, deliverables and decision making. In the beginning firm EH had to go through many trials and errors but. Latter EH invested in building significant onsite delivery and consulting capability to absorb the process overheads of offshore by locating its business practice leaders, account managers and top management team in North America. This structure enables quicker decision-making and ease of access to customers. The company's onsite/offshore delivery model provides significant cost and time savings. EH's development centers are assessed at SEI CMMI-Level 5, and are also ISO 9001:2000 certified. These help EH to continually provide high value, high quality deliverables to its clients. Firm EH's COO comments that: *"We have consistently delivered to client expectations and have established long lasting relationships with them. We have taken large projects and, always completed on time, successfully and customers continue to be with us, and give references to other prospective customers."*

Being a technology oriented company the firm has to keep itself up-to-date with the new technologies and market demands. This requires continuous technology training and upgradation. But only technology is not sufficient for the customer satisfaction, firm EH has to understand the business of its customers and develop solutions that meet their business goals. Firm EH's project manager comments on this as follows: *"Customers expect more value to their business, not pure technology. Technology they use is primarily provided to their business users, so the understanding of their business process,*

how technology can improve their business process, how technology can enable or incrementally improve their business process, is important. We are trying to provide services where we have the expertise". The COO of EH further comments on its customer servicing capability as follows: *"Every interaction with customer generates valuable and new knowledge that needs to be absorbed into the organization system, for future use, and the best practice development. We focus on developing best practices to achieve high efficiency and customer satisfaction. We constantly train our workforce on new range of technology platforms, and wide range of customer problems. Every new learned experience is shared across the organization, to enhance the customer and project handling capabilities of the firm."*

In summary, firm EH through its continuous learning mechanisms has been able to meet the customer requirements and strengthen its relationship. This has positively affected the international growth of the firm.

Discussion & conclusion

In this paper I focus on the development of capabilities and show that how knowledge intensive firms adapt to and exploit changes in their business environment. The analysis of cases shows that capability building in these firms is an evolutionary process and it continuously improves with the changes in the environment. Firms in the beginning had little capability base in the terms of organizational structures, routines and competencies, but they rapidly improved it to the level of a competitive advantage. These firms are investing in developing capabilities which they find crucial for the performance. A key requirement in such firms is the ability to service customer operations worldwide; this depends on their ability to establish mechanisms to facilitate organizational learning and the transfer of knowledge across markets. Development of operational links among activity system across markets and regions helps strengthen the firm's competitive position especially against local competitors or firms operating on a decentralized basis. This requirement has resulted in the development of global service delivery capability. I found that to be a global knowledge service company a firm has to develop global capabilities. These capabilities are necessary to take advantage of the low cost skilled

human resource available in developing countries, take advantage of the time difference between different continents, and avoid the natural / political / terrorist / strikes or any other unexpected disturbances which is beyond the control of the firm. Development of such capabilities have been possible due to factors like rapid advancements in the information communication technologies, global integration of the economies, standardization of the trade practices, difference of currency exchange rates, difference in wages, and availability of a large pool of untapped talent in different parts of the world.

In the presence of favorable factors these firms have been able to accumulate the early internationalization experiences and convert them into firm specific competences. This finding improves our understanding of the market commitment decision as described in the internationalization process model of Johanson and Vahlne (1977). My findings suggests that knowledge intensive service firm's market commitment decisions are not measured in terms of financial investment or subsidiary expansion decision, but as a strategic choice of where to locate the development center and where to market the service. In the I-P model it was more disintegrated and understood as headquarters subsidiary type relationship, while in this study I find that the emphasis is on linking the operations across the globe. For instance the presence of 2 men in a country with a small or rented office may give the impression that the firm has low commitment to the market, but in-depth investigation reveals that the market is giving profit in the millions of dollar and this has been made possible through the global integration of operations.

Developing global service delivery capabilities require careful investment in building knowledge bases and other complementary capabilities, such as knowledge sharing and retention capabilities. Multiple teams across the globe are engaged on the same project, this requires managing time differences, and a good project management, for instance, how to allocate different teams on the different modules of the project, then how to integrate them, how to monitor the work process and final testing. It also involves coordination with the clients and continuous feedback. They all work in harmony, with little margin of getting derailed.

Any new knowledge emerging from the client experience or market / technological changes is incorporated into the learning and capability up gradation. This insulates the capabilities from becoming obsolete. Thus these capabilities require

continuous monitoring and modifications and are not static in nature. Improvement in capabilities will result in improved project profitability and that different capabilities yield different benefits.

Another major finding has emerged out of the case studies is that these firms have global footage. Their internationalization process is different from the one discussed by Lopez, et al. (2008). In all the four cases, firms begin their internationalization of operations in USA and Europe, and not in the cultural proximity. Their major focus has been on western developed markets and not the local and neighboring developing countries. After a few years of their existence they have successfully managed to start international operation in different geographical areas across world and can be said that they have global footprint. These firms are providing services in various fields, and are not limited to a niche. Firms attribute this to their confidence in the global service delivery capabilities.

The capability of building an effective working relationship with clients is one of the most important assets held by knowledge intensive service firms. Relational capital refers to the joint benefits embedded in a relationship between two or more parties that is highly important to those parties (Dyer & Singh, 1998). It includes knowledge and understanding of the other party leading to shared meaning, commitment, and norms of reciprocity. Thus, knowledge based service firms must be responsive to clients and provide services that satisfy their needs (Griffith & Harvey, 2004). These firms use their technological, business domain, and experience of working with client's knowledge to satisfy clients' needs, transferring some of this knowledge in the process. The continuity of a relationship and the amount a client is willing to pay for services reflect the quality of the relationship between client and provider (Saparito, Chen, & Sapienza, 2004). Additionally, longer relationships tend to afford stability and continuity that contribute to norms of reciprocity and trust, which in turn generate referrals and endorsements (Nahapiet & Ghoshal, 1998). Accumulated experience with a particular partner also helps a service firm to extend its knowledge base, which is instrumental in obtaining new clients.

Thus it is my understanding that these capabilities are backbone to the internationalization process of the knowledge intensive service firm. Without these

capabilities these firms would find it difficult to sustain in the globally competitive market place. These capabilities also require continuous monitoring and improvements according to the changes in the situations.

Limitations and future research

This study like any study, suffers from some limitations. First, it is based on single service industry with its own peculiar characteristics. It is not clear to what extent the substantive results of this study are generalizable across industries. At the same time I must stress that capabilities are usually context specific. Other limitations are that not all capabilities have been enumerated in this study, and some capabilities have been merged into one construct. This study is based on data from four firms and I believe including more firms into study would have provided opportunity to make comparison across the firms. Also it would be interesting to study those firms which have done fairly poor or could not survive long whether they tried to develop these capabilities or not.

In spite of these and other limitations, I believe this paper provides some unique and insightful data on the capabilities development in knowledge intensive service industry and makes an attempt to uncover the micro foundations of capabilities and how they affect the performance. I hope the spirit of this paper in advocating the importance of contextually grounded studies of firm capabilities will spur further research along these lines.

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Table I. Stages in theory development using the grounded theory method

Analytical goal for stage	Raw data used	Analytical procedure used and its outcome	Implications for new theory development
Describing the evolution of case firms	Feature articles, industry reports, and video recordings of founder/COO appearances over many years.	Thematic analysis. Producing time lines of the evolution of the four case firms.	Sensemaking in firms with different backgrounds and capabilities causes them to converge to the same emerging knowledge intensive service sector.
Identifying the situations, the capability development actions and the resulting capabilities	Case histories, company reports, and press.	Coding of different types of capability development actions according to broad capability categories to break down and then reconstruct the data.	Simultaneous action on multiple capabilities depending on what is perceived as important and how management's effort is allocated to the different capability domains.
	First round of interviews with the members of the management team. Stories of the key persons' interpretations of firms' evolution	Coding of the different types of capability development actions sequentially into a timeline according to the capability categories.	Capability development would seem to shift from one capability category to another depending on what is the next bottleneck on a company's evolutionary path.
Uncovering the dynamics between the sensmaking and capability development actions	Second round of interviews with the project managers and members of the project team. Recorded interviews with a focus on the formation of learning mechanism and the subsequent actions. (In total 9 persons interviewed.)	Revision of the earlier frame work.	The changes in experience cause 'changes on multiple capability categories making the evolution take place over time in a manner from one capability arrangement to another.

Table II: A model of Global Service Delivery arrangement in one of the case firm

Tasks	Onsite	Near-Site	Offshore
Strategy and Roadmap definition	Client interaction, Interviews, Reviews, Program leadership, Goal setting	Analysis and synthesis	Background research Thought leadership & Information Support
Development & Integration	Architecture requirements, Change Management & Implementation	Requirement analysis, High level design, Prototype building, Implementation support	Detailed design, Code development, Testing & integration
Systems Integration & Package Implementation	Client interaction, Process mapping, Solution definition, Architecture change, Program management	Prototype building, High level design, & Implementation support	Custom components, Integration interfaces, & Report building
ITO, BPO, & AMO	First-level support, Facilities support & Program management	Near-site support centers, Service redundancy	Large offshore centers, Core service delivery