

i. Trade Association Efforts at Upgrading Education

The Indian government first identified education in software as a focal area in 1986. At this time, it began to consider the training needs of this industry as distinct from others. These educational reform efforts included updating curricula to take account of new software development methods and technologies. Yet, industry needs have continued to outpace the ability of the government to assess skill gaps and recommend changes in curricula. According to one scholar, by 1996 “skill constraints continue[d] to afflict the Indian software industry including the demand-supply gap (especially for higher-level skills and for domestic-oriented production)” (Heeks, 1996, p. 283). In addition, many of the governmental upgrading efforts in higher education were implemented very slowly. For example, a 1986 proposal to create four Indian Institutes of Information Technology (IIIT) remained unimplemented until 1998, when the first IIIT (Hyderabad) was founded, due to disagreements between government ministries responsible for its implementation.⁵³

These policy failures underscore the Indian government’s incoherence and shortcomings in preparing labor for industry needs. Due to these continued problems, industry lobbied for educational changes and NASSCOM sought to influence education reform since 1991 (Pingle, 1999, p. 151). Yet by 2001, they elevated this issue amongst its member companies and became increasingly involved with educational policies at engineering colleges. For example, Indian’s best known IT entrepreneur, founder of Infosys, and former NASSCOM President, Narayana Murthy, gave a speech on education at the NASSCOM 2001 Conference that was also devoted to education (Kanavi, 2001).

⁵³ The disagreements were between the Ministry of Human Resources Development (MHRD) and the Department of Electronics (DoE) (Heeks, 1996, p. 283).

This speech delivered by a high status individual in the industry coupled with the conference theme on education signaled to industry members and observers inside and outside India the importance of education on future growth of the industry. In addition, to raising awareness of the importance of education, the Association held serious discussions around the specific task of upgrading the engineering colleges on which the industry in India relies. According to then President Dewang Mehta, "there is serious discussion going on among us on how to raise the standards of the 43 regional engineering colleges to those of IITs" (Quoted in Kanavi, 2001). The Association also began to consider ways industry could contribute funds to improve the quality of engineering education. NASSCOM sought to,

revitaliz[e] the Indian technical and engineering education to provide a high quantity of high-quality engineers to achieve export goals of \$50 billion. This is a major initiative and creating a separate industry fund for this purpose is also being considered. (Kanavi, 2001)

Besides discussing how educational upgrading would be paid for, this excerpt also suggests the broad scope of this project as a "major initiative."

Dissatisfied with the pace and content of education policy change, NASSCOM increasingly led developmental efforts by stepping into the traditional governmental space of educational policy formation in order to promote private sector participation in the education system.⁵⁴ Although India produces more engineers than any other country in the world, many of them simply do not have the skills and experience to work for foreign companies. According to one industry manager, "there are 16,000 colleges who have more than 400,000 engineers coming out, only 25 percent of whom are classified as

⁵⁴ Other associations also contributed to efforts, such as CII's focus on "education, sharing platforms for education, sharing platforms with skill development" (Personal interview, Senior Director, CII, January 12, 2009).

being employable.”⁵⁵ This statistic of a 75 percent shortage of employable graduates from universities was cited in an industry report that highlighted the mismatch between skills of graduates and the skills required by industry (NASSCOM & McKinsey, 2005). This skill shortfall was used by the organization to justify their efforts to reduce this mismatch through programs focused on training and education reforms and upgrading.⁵⁶ Other managers⁵⁷ and government officials⁵⁸ also noted the shortfall of adequate skills among graduates, which corroborates NASSCOM’s analysis and the underlying need to do something to address the shortfall. Further complicating this picture is the fact that not all engineering graduates have the number of years of educational training expected of their counterparts from developed countries. Indian engineering totals include those that received four-year degrees as well as three-year training and diploma holders (Wadwa, Gereffi, Rissing, & Ong, 2007).

One central problem with India’s educational system where the industry is concerned is its pedagogical methods. In India, pedagogy historically has focused on rote memorization. In general, however, industry is looking for, “individuals having an ability for problem solving, to be able to think ‘out-of-the-box,’ to be able to basically communicate, and . . . in the domain space, to have the ability to understand and to apply, because most of the questions or assessments that are done in the colleges usually focus on rote learning and the lower order thinking skills...”⁵⁹ The skills that employees lack may be technical, industry specific knowledge, and cultural and interpersonal

⁵⁵ Personal interview, Vice President, Infosys, December 3, 2008.

⁵⁶ Personal interview, Director, NASSCOM, January 30, 2009; Personal interview, Director NASSCOM, April 7, 2009.

⁵⁷ Personal interview, Manager, Infosys, November 23, 2007.

⁵⁸ Personal interview, senior Indian civil service officer, February 27, 2009.

⁵⁹ Personal interview, Director, NASSCOM, April 7, 2009.

communication skills. Key skill deficiencies included generic technical knowledge or “hard skills” (i.e. IT or accountancy skills), domain skills (knowledge specific to an industry, such as telecommunications or automotive), and “soft skills” (i.e. interpersonal or inter-cultural skills).⁶⁰

In response to the mismatch between graduate skills and those skills needed by industry NASSCOM began its most extensive and coordinated effort at reforming higher education in India with the launch of its “Educational Initiative.” In December 2006, NASSCOM appointed a Director of its Educational Initiative, hired staff to support the program, and helped to drive some of the recent educational policy changes in India.⁶¹ The NASSCOM Educational Initiative is composed of a number of different programs aimed at closing the skill gap identified above and at enhancing the upgrading of skills of the workforce through increased education quality, capacity, and tighter linkages between academia and industry. The goal of the Educational Initiative is to increase the number of IT graduates and PhDs and the number and quality of faculty in information technology.

NASSCOM, in conjunction with the Government of India’s Ministry of Human Resource Development (MHRD), which oversees educational policy in the country, and with funding by the World Bank, presented a comprehensive PPP aimed at upgrading higher education in India. Several resource rich firms that developed educational outreach programs on their own contributed their insight and experience. For example, one respondent at Infosys “worked quite closely” with NASSCOM in order to “see if some of the education that we do can be taken out to the schools, [and] how we can influence the

⁶⁰ Personal interview, Vice President, Infosys, December 3, 2008.

⁶¹ Other industries are also involved in influencing educational reform, but are not taking a leadership role relative to the IT industry (personal interview, Director, NASSCOM, 1/30/2009).

education system of the country . . . at the national level”.⁶² Despite educational program plan input from members in some areas, it was the trade association that culled these disparate and small-scale activities together, while adding other features, such as plans for expanding the number of engineering colleges, into a scalable national program in partnership with the government.

One element of the overall government plan was to increase the number of IT engineering colleges in the country. NASSCOM was the key coordinating body that drafted and submitted the overarching PPP plan that will create twenty new Indian Institute of Information Technology (IIIT) universities (in addition to the existing six) in order to address the increasing skill challenges of the Indian IT industry (NASSCOM, 2008) The report states that it “entrusted NASSCOM with the responsibility of preparing a Model Detailed Project Report (DPR) for the IIIT initiative” that will serve as a template for each of the twenty individual IIITs “and it is expected that there will be minimal variations” (NASSCOM, 2008). From this document it is clear that NASSCOM is leading the government in India in drafting the policy. The Model DPR document was submitted to the MHRD on May 23, 2008 and NASSCOM is assisting the Ministry and state governments to operationalize the plan that was approved by the central government (Ministry of Human Resource Development, 2010a). The Government of India committed to building 2000 crores⁶³ for their establishment of the twenty new IIITs in its Eleventh Five Year Plan and budgeted (Government of India Planning Commission, 2009). The DPR focused on the vision for the institutes; the governance structure; operational details like land and infrastructure, courses, curriculum, student admissions

⁶² Personal interview, Vice President, Infosys, December 3, 2008.

⁶³ A “crore” is a unit of measurement in India equal to ten million.

and faculty; the financial model for the institutes and indicative locations for the institutes.

The increased role corporate partners have in higher education in this plan reflects the shift in neoliberal institutional practices in the state sphere of higher education. The governance structure of the IIITs is based upon a combination of state governments, the central government, and corporate partners. Corporate partners are expected to provide a majority of the financial funding of each IIIT, which will likely translate into a greater degree of corporate influence in the operation of the universities relative to the state. The plan specifies that the central government will provide a maximum of 14.9 crores and corporations will provide a minimum of 15.1 crores (NASSCOM, 2008). The corporate partners will also select employees from their firms to serve on the faculty for an “extended period time” rather than the current guest lecturer approach (NASSCOM, 2008).

Another key aspect of the NASSCOM plan includes training faculty at universities and engineering colleges in up to date methodologies and technologies through National Faculty Development Programs. Leading member companies, such as Infosys, have experience developing and running industry outreach programs and provide input into the faculty development programs used by NASSCOM. A manager described how Infosys’ own “Campus Connect” Program was used as a model to design the faculty enablement program and the national curriculum in schools and later integrated into the NASSCOM Educational Initiative.⁶⁴ The national faculty development program proposed by NASSCOM increases the scope of this effort to target 20,000 professors for training. The “pulling up” of Infosys’ “Campus Connect” program by NASSCOM is one example

⁶⁴ Personal Interview, Vice President, Infosys, December 3, 2008.

of firm level development practices that are aggregated and incorporated into industry level policies that address skill shortages and upgrading potential in the industry.

NASSCOM increasingly adopted a broader agenda and more comprehensive tactics in its attempt to achieve educational reform. For example, the organization shifted from advocating stronger education to actually developing a plan with the government that seeks to achieve educational goals based upon proven concepts developed by specific firms in its membership and integrating these plans with additional research and policies into a national education plan. Additional effort also went into coordinating industry insiders, government ministries, and universities around this plan. The scope and depth of this plan constitutes something more significant than and distinct from typical trade association lobbying efforts.

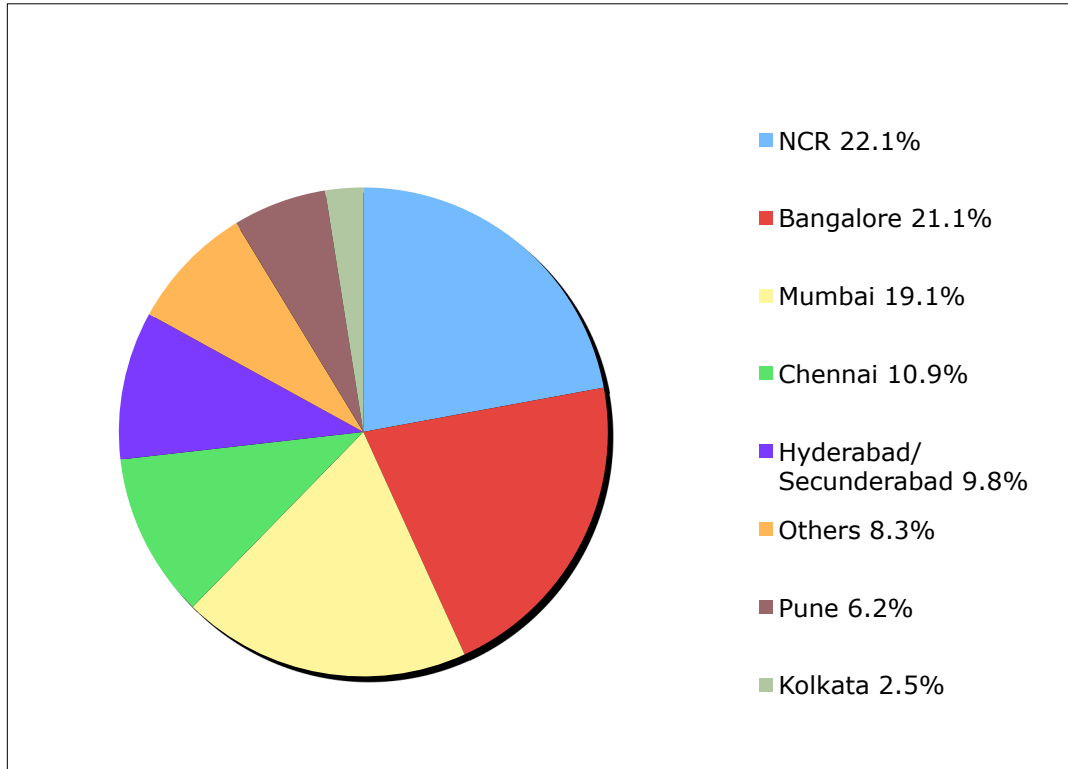
ii. Efforts in Developing New IT Clusters: Tier II and Tier III Cities

NASSCOM worked with state and central governments on a range of infrastructural projects that directly contribute to cluster development. These efforts included advising on industry needs concerning communication and power infrastructure into IT office parks, space requirements for industry, organizing and hosting public meetings with developers, governmental officials, and industry insiders to shape SEZ development (Kannan, 2008; Nasscom miffed with current IT SEZ norms," 2006). NASSCOM also advises on a broad array of city planning issues, such as road access, wireless access to IT commuters stuck in traffic, and consulting on new international airports. For example, NASSCOM worked with the "Civil Aviation Ministry to convert airports in Hyderabad, Bangalore, Ahmedabad, and Pune into international airports so that global movement of IT professionals becomes less of a pain" (Kannan, 2008). The Association's most

significant infrastructural project involvement, however, has been providing city planning recommendations and plans to state governments to help them develop new and existing industry clusters.

NASSCOM undertook an effort to develop less developed IT cities in order to help address growing industry labor and resource shortages in saturated IT hub cities. The offshoring boom that accelerated during the late 1990s and early 2000s led to a tightening labor market, increased labor costs, low employee retention, and strained infrastructure in booming IT hubs where most of the work was carried out in India. For example, 92.7 percent of industry exports come from the top 7 IT cities in the country (NASSCOM, 2009a). These cities are Bangalore, Chennai, Delhi's National Capital Region (NCR), Hyderabad/ Secunderabad, Kolkata, Mumbai and Pune (See Table 3.2: City wise spread of NASSCOM Membership). Industry, led by NASSCOM, sought to address its shortage in educated labor by shifting some industry growth toward what the industry calls Tier II and Tier III Indian cities.

Table 3.2: City wise spread of NASSCOM Membership



Source: (NASSCOM, 2009a)

Table 3.3: Development of Tier II and Tier III Indian Cities

<u>Location Attractiveness</u>			
← Most attractive			Least attractive →
Leaders (Tier I Cities)	Challengers (Tier II Cities)	Followers (Tier III Cities)	Aspirants
Bangalore Chennai Hyderabad Kolkata Mumbai NCR Pune	Ahmedabad Bhubaneshwar Chandigarh Coimbatore Indore Jaipur Kochi Lucknow Madurai Mangalore Nagpur Thiruvananthapuram Tiruchirapalli Vadodara Visakhapatnam	Aurangabad Bhopal Goa Gwalior Hubli-Dharwad Kanpur Mysore Nashik Pondicherry Salem Surat Vijayawada	Allahabad Dehradun Durgapur Gangtok Guwahati Ludhiana Patna Raipur Ranchi Shimla Siliguri Srinagar Varanasi

Source: Compiled from (NASSCOM & Kearney, 2008).

NASSCOM is helping to facilitate the development of Tier II and Tier III cities by engaging the government and then later directly advising and supporting their efforts. Government officials, particularly chief ministers of local states, are eager to spread the benefits of the IT industry to smaller cities in the country and attract additional revenue and jobs (NASSCOM, 2006e). By helping to attract industry to Tier II and III cities, one NASSCOM director says, “we will get government support because it actually addresses inequity and access to quality life.”⁶⁵ A government official responsible for promoting the IT industry in the state of Karnataka stated that the problem is that “start-up costs [are] too high in Bangalore and [the] solution is to move to Tier II and Tier III” because “. . . labor is cheaper and land is more available”.⁶⁶

NASSCOM began consulting for state governments on developing new industrial clusters after it received “requests from multiple states that we [NASSCOM] should do a study on which locations in those respective states are as close to being ready as possible to become IT hubs.”⁶⁷ NASSCOM commissioned a study that identified and analyzed 50 potential IT cities in India; seven of which are called the leaders (noted in Table 3.2) and the remaining 43 designated as challengers, followers, and aspirants (See Table 3.3: Development of Tier II and Tier III Cities).⁶⁸ The study provided a detailed analysis of industry needs along key parameters, such as labor skill availability, infrastructure, social and living environment, business environment, government support, operating costs, delineated positive and negative attributes in each city, and detailed the tasks state

⁶⁵ Personal interview, Director, NASSCOM, January 30, 2009.

⁶⁶ Personal interview, Government Official in Department of Informational Technology, Biotechnology, and Science and Technology, State of Karnataka, March 9, 2009.

⁶⁷ Personal interview, Vice President, NASSCOM, January 14, 2009.

⁶⁸ Personal interview, Director, NASSCOM, January 30, 2009 and (NASSCOM & Kearney, 2008)

governments needed to address in order to attract IT companies to their cities (NASSCOM & Kearney, 2008).

After sharing the report “some of the state governments then wanted us [NASSCOM] to put together a blue print on how to go about bringing those up to speed, so that is again something that one is working with state governments.”⁶⁹ At this point, state governments wanted more than just an analysis on where Tier II and III cities stood, but also a plan on how state governments could develop the clusters to be more competitive against their peers. Providing plans to state governments on how to develop city infrastructure represents a significant break from the lobbying activities trade associations are recognized for. It also shows how far NASSCOM has come from its early years when it was fighting for government attention and recognition as a strategic industry. Now state governments solicit the Association for their recommendations and plans on how to develop their cities to attract companies.

One approach state governments have taken to attract companies to these cities is to offer new benefits and tax incentives and upgraded infrastructure. A NASSCOM director explained the Association’s role in drawing attention to these incentives:

I think it is very necessary for us to actually see that this [move to Tier II and Tier III cities] happens. So, we would be helping our industry move. So what NASSCOM does is we have 7 regions, [and] regional councils. We advise all our regional council members to actually see why it is good for them to move and how the STPI [Software Technology Parks of India] and SEZ rules permit actually a lot of tax rebates for them to move up there . . .⁷⁰

In this quote, one can see how NASSCOM actively promotes industry to move to these less developed locations by reaching out to firms through its regional council structure.

The Association also educates the industry on the tax rebates and incentives that the

⁶⁹ Personal interview, Vice President, NASSCOM, January 14, 2009.

⁷⁰ Personal interview, Director, NASSCOM, January 30, 2009.

Government of India provides through the STPI and SEZ schemes in order to help facilitate this move.

Although it takes time to develop an industrial cluster there are already signs that the strategy is succeeding. According to the former Secretary of IT in the state of Karnataka,

IT companies are going [to Tier II and Tier III cities]. They are going to Mysore, they are going to Mangalore. . . . Last year in Mysore, the total exports increased, I am talking year on year 100% in Mysore. It was 74% in Mangalore, year on year. So Mangalore and Mysore are picking up very well.⁷¹

Thus, NASSCOM and state governments appear to be successfully promoting new cluster formation.

Some firms are attracted to these Tier II and III cities to find alternatives to the competitive labor market in the top 7 IT hub cities. The move toward these less saturated Tier II and III cities provides industry access to new sources of labor, at lower costs, with higher employee retention. It also provides access to cheaper power and more plentiful land for business needs.⁷² According to one Senior Manager, in order to help with the shortage of skilled labor and rising wages, they are hiring employees from the Tier II and Tier III cities and are opening more offices there.⁷³ Despite the attractiveness of labor availability, higher rates of employee retention, and labor skills for some firms operating in Tier II and III cities, some firms remain reluctant to move to these locations because they are worried about the availability of high-level skills.

The shortage in high-level skills in Tier II and III cities is at least partly due to the relatively weak educational levels in these cities relative to more developed cities. IT hub

⁷¹ Personal interview, November 15, 2007.

⁷² Personal interview, Director, NASSCOM, January 30, 2009.

⁷³ Personal interview, Senior Manager, Infosys, January 4, 2008.

cities (Tier I cities) usually have colleges that are much better than Tier II and III cities. This is because they have higher enrollment and fees, which allows them to “pay the teachers a substantial amount, which means they get the best quality teachers and they have a curriculum, which is quite progressive because of which the placement records are almost 100 percent, so most of our member companies usually go there.”⁷⁴ Although there are a sufficient number of graduates in Tier II and III cities, they have not reached the quality of those produced by colleges in the Tier I cities.⁷⁵ The reason for the lower levels of educational quality is because these cities are more economically depressed, the schools have low quality teaching, high student to faculty ratios, and difficulty finding faculty with the appropriate qualifications and training for the subjects that they teach.⁷⁶

In order to address these specific concerns about education and skills in Tier II and III cities, thereby making these locations more attractive to industry, NASSCOM is trying to improve equitable access to education and upgrade labor skills as part of its larger national Educational Initiative.⁷⁷ Explains one director, NASSCOM works with universities to identify “what it is that they are deficient in and how they could improve it.”⁷⁸ The Association is proactively informing each of the state governments about these recommendations and the work the organization and its members are performing with universities in order to improve the educational system to meet future industry needs.⁷⁹ Over the coming years graduates from universities in these lower Tiered schools may be more capable of performing more skill intensive and higher value tasks.

⁷⁴ Personal interview, Director, NASSCOM, January 30, 2009.

⁷⁵ Ibid.

⁷⁶ Ibid.

⁷⁷ Ibid.

⁷⁸ Ibid.

⁷⁹ Ibid.

NASSCOM's recommendations and planning activities on behalf of state and city planners serve to blend the demarcating line between state and industry activities, while also further expanding the role served by trade associations in cluster development. As in the case of educational reform discussed above, NASSCOM's involvement in cluster development demonstrates its growing role in industrial development, which extends beyond lobbying efforts and advising to include highly involved planning.

VII. Conclusion

In this chapter I have argued that trade associations try to develop an industry. In particular, they may play various roles in attempting to facilitate an industry shift from production of low value toward high value products and services through their engagement with the state, firms and developers, universities, and other stakeholders. Drawing on an analysis of NASSCOM's efforts in industry development, I examined some strategies used by trade associations to contribute to industry development. In the case, I argue over time such strategies have come to extend beyond coordinating or lobbying activities to include actual planning and policymaking. Under the umbrella of the neoliberal state, these previously under theorized civil society actors – trade associations – are key actors in efforts to develop industries.

The early years of NASSCOM demonstrate the organization's influence and effectiveness in gaining recognition and concessions for the industry and in managing public perceptions that directly affected the industry. Specifically, NASSCOM established itself as the key associational player in the IT industry, achieved or provided greater access to a number of collective goods for the industry, such as tax incentives and

telecommunication infrastructure, and effectively managed industry impressions domestically and abroad. However, it was the shift toward a global service delivery model, the acceleration in the volume of service over a billion US dollars, the broadening scope of services exported from India in early 2000s, and the new constraints that these industry shifts provided that prompted the Association to adopt a more proactive and expanded agenda.

NASSCOM's policy work on education and its efforts to promote and plan cluster development most clearly reflects the degree to which NASSCOM sought greater participation in areas traditionally considered state responsibilities. I argue that the Association's actions in these traditional state areas approximated a quasi-state role in the industry development process and as a result, represent a qualitative shift from the pure lobbying and coordinating role trade associations traditionally hold in development in the academic literatures.

Yet, trade associations did not replace the state in planning functions or policy implementation. Rather, the state *invited* industry to participate in these partnerships. State officials were eager to work with the IT industry once the industry had attained a degree of visibility and had become a significant export revenue producer. In particular, government officials hoped to attract IT companies to new potential IT hubs in an effort to replicate the success achieved in the primary IT hub cities. The growth in IT simultaneously highlighted the revenue potential of the industry and, under the cumulative effort from NASSCOM and other firms, the educational requirements for future industry upgrading and development. As a result, both the state and industry were motivated to pursue public-private partnerships to address these issues.

The PPPs formed between NASSCOM and the Indian state offer further evidence that the traditional model of development driven by a centralized governmental bureaucracy has given way to a more decentralized model of developmental governance where a number of actors collaborate through recurring interaction in a larger ecosystem. The PPP model requires tighter collaboration with a variety of stakeholders, including departments and agencies at various levels of government at the city, state, and federal levels; firms; associations; developers; and educational institutions.

While this analysis suggests broadly that sectorial trade associations may play a key role in industry development and upgrading, it also acknowledges associations that have broad memberships spanning multiple industries may have a weak or negligible influence on pushing industry in this direction. In this case, the national industry association, CII, played a complementary role to sectorial associations by building consensus behind broad industry positions and programs. One example cited above was the early supporting role CII played in influencing the state to deregulate the telecommunications industry. In this case, broad national industry associations were hindered by the difficulty of forming an industry consensus around such diverse member interests, which made them less focused, effective, and consistent in providing leadership on development and upgrading that directly affected the IT and ITES industries. Industry associations with a broad membership stretching across multiple industries, however, may potentially play a more significant role in upgrading industries by helping firms form business ties that enable firms to develop, test, market, and sell new products and

services that address the needs of underserved domestic markets.⁸⁰ These business ties may also provide an emerging industry the opportunity to perform the whole range of activities of a product or service (beyond just the low value, low skill activities typically “offshored” to developing economies), which more quickly facilitate industry upgrading.

Developmental governance driven in partnership with trade associations is a potential mechanism to facilitate industry development in other industries and developing countries. However, it is important to recognize that associations form after an initial cluster of companies is already established and able to collectively organize. As a result, as the Indian IT case suggests, partnership with trade associations may occur after an industry is already formed. For this reason, state partnerships with trade associations are not likely to facilitate entry into completely new industries, as was the case in the DBS. Yet, trade associations, once established, may become key actors interacting with the state to guide, coordinate, draft, help implement developmental policy and help advance upgrading in industries that are already established. This mechanism may in fact operate in other industrial sectors or in other developing countries that have similar state society relations to those found in the Indian IT case; such cases may offer potential areas for future analysis of the role of trade associations in developing countries

⁸⁰ CII pursued this strategy by organizing industry to focusing on small to medium sized domestic firms in India that are relatively neglected by IT firms focused on the export market (Observations from CII IT policy meeting, New Delhi, February 20, 2009).

Chapter 4

Knowledge Transfer

I. Introduction

A central question of this dissertation is: how do industries in developing countries “upgrade” to higher value activities? In order for this process to take place, we need to understand different processes of skill development that enable upgrading. One critical process that my data suggest plays a crucial role in industry upgrading in Indian firms is the transfer of knowledge *between* organizations based in developed economies and those firms based in developing economies. This may occur through two mechanisms. One is through the movement of technically skilled workers between developed countries and India, prior to the founding of Indian service firms. The second is through ongoing interactions between India-based service providers and their clients after Indian firms are already established. Because firms in developing countries face higher barriers in accessing the skills and knowledge to compete with firms in developed economies (Gereffi & Korzeniewicz, 1994), both of these knowledge-transfer processes are particularly important in helping firms in developing regions move into higher value tasks.

The fragmentation of global production coupled with the rise of global production networks has resulted in the dispersal of production across country boundaries (Gereffi & Korzeniewicz, 1994; Sturgeon, 2002). This intensification of production networks spanning across borders has caused some country-focused development strategies to

falter (Amsden, 1989; Johnson, 1982; Wade, 1990b). Instead, in a system of dispersed industrial production networks, the transfer of knowledge between firms and via “reverse” migration of skilled workers across country borders are key mechanisms that lead to industrial upgrading (Gereffi, 1999; Saxenian, 2006). My findings suggest that two primary factors facilitate knowledge transfer between firms in developed and developing countries in the outsourcing industry: first, the migration of technically skilled workers back to their native countries and, second, firm-facilitated cross-national learning through the physical movement of their employees to their client site and through ongoing client-vendor interactions through collaboration via phone, email, and the hand off of work. Though knowledge transfer via interfirm relationships and the movement of workers plays a crucial role in the upgrading process, there are two structural constraints that limit these strategies’ effectiveness in fostering the upgrading process. It is these mechanisms – both enabling and constraining – that I explore in the present chapter.

In all four of the cases discussed below, I find that knowledge was transferred from developed regions to developing countries through the movement of key employees traveling between India and the US. The sources, methods, and timing of the knowledge transfer varied between companies. A precondition for knowledge transfer in all four cases is a strong background in higher education and post-graduate work. Each firm needs a broad base of “knowledge workers” in addition to whatever training the firm executives may possess, in order to be effective knowledge service providers. This was true even for the Global Radiology Center (GRC) and Infosys, who were more dependent upon the clients for learning how to provide these services than Teleradiology Solutions and Evalueserve.

For Teleradiology Solutions and Evalueserve, the founders' professional experiences with their previous employers allowed them to test ideas and delivery concepts that they later developed into a business model for their respective organizations. In these cases the most important knowledge transfer occurred *prior* to their formal establishment of their respective organizations. For the GRC and Infosys, in contrast, the interaction with *existing* clients were the primary mechanisms for the transfer of skills required to successfully deliver knowledge services. Both firms used the regular movement of workers between the client and the Indian offices as a primary source of learning. This increased reliance on clients can be attributed to two factors. First, the GRC and Infosys lacked experience providing these specific services until they began providing them within the context of their relationships with their customers. Second, the services Infosys and the GRC provided are much more deeply integrated into their client's processes than is the case with Teleradiology Solutions and Infosys. As a result, Infosys and the GRC's relationships with clients were characterized by consistent contact, via phone and email on a weekly or daily basis, to share information necessary for the delivery of work. Below, Table 4.1 provides an overview of the primary sources of knowledge and the mechanisms for transfer.

Table 4.1: Overview of Firm Sources of Knowledge

	Primary transfer mechanism: Learning through client relationship	Primary transfer mechanism: Learning through technical migration
Finance	<p><u>Infosys</u></p> <p>Movement of employees to client site to document process & training.</p> <p>Constraint: access to client knowledge</p>	<p><u>Evalueserve</u></p> <p>Founders learned knowledge required through education & work abroad with MNCs</p>
Medical	<p><u>Global Radiology Centre (GRC)</u></p> <p>Indian doctors trained by client, which in turn train rest of offshore team</p> <p>Constraint: access to proprietary knowledge & US credentialed labor</p>	<p><u>Teleradiology Solutions</u></p> <p>Founding radiologist took US credential, medical training & experience back to India. Hired additional credentialed US radiologists who could do the same.</p>

In elaborating on the above-mentioned dynamics, this chapter proceeds as follows. I begin by briefly discussing some critical constraints on upgrading and their implications for our understanding of the structural limitations of knowledge transfer in the existing global market. Next, I identify the primary knowledge transfer mechanisms in each of the four cases that are the focus of this study. In doing so, I also analyze the founding of each firm and/or the service offering it provides, which sheds light on the role of prior (foreign) education and training, and a lack thereof as is sometimes the case under professional authority. As I examine each of the cases, which were briefly introduced in the Introduction to this dissertation, I provide further background on the firms. Finally, I draw these case analyses together in order to highlight the key mechanisms for knowledge transfer for upgrading, given existing structural constraints.

II. Limitations on Upgrading

As noted, industrial upgrading faces significant obstacles, particularly as an industry moves into higher value activities. In the global trade of professional services there are two major constraints on industrial upgrading that determine the scope, method, and extent of learning. These constraints are 1) lack of access to propriety knowledge, data, methods, and systems and 2) professional and legal barriers for upgrading. The lack of access to firm knowledge can be overcome through trade relationships, if given access, but these may constrain or slow learning to the lower skill end of operations, which is a product of the clients' desire to retain a competitive advantage. Yet, through a process of trust and growing capability, upgrading into a succession of higher value tasks is achievable. This is the traditional route of upgrading in manufacturing and apparel industries, characterized by a step-wise move into increasingly complex and higher value activities.

The second of these constraints around professionalization is of particular interest for this study. Both financial and medical industries have occupational and professional groups that define labor qualifications that serve to restrict some tasks to specific groups of laborers, thereby excluding others. The medical profession has been much more effective than finance in enlisting government support to legally protect specified, high value tasks through credentialism. In turn, the interaction between the state and professional associations has a vast effect on the structure of opportunities for professional service offshoring. Of the industries addressed in this study, teleradiology is a much more tightly controlled industry than finance, which makes it particularly difficult for radiologists overseas to practice. The medical industry is characterized by a history of

effective lobbying from the medical profession, which created a professional monopoly over medical services. This particular institutional history constrains international teleradiology services, in general, and limits how knowledge is transferred, in particular.

The constraints on the teleradiology industry in India can be explained with reference to the sociological literature on professions and expertise. Professions are characterized by expertise, power, and authority (Abbott, 1988); they seek to protect this power and authority through the creation of a monopoly over competence, officially sanctioned as “expertise” (Larson, 1977). Professional associations act as representative agencies for individual members, shaping and redefining appropriate practices of interaction amongst their memberships (Greenwood, et al., 2002), acting collectively to lobby government agencies for recognition and protection of professional rights.

The accounting profession, in contrast to medical professions, has been relatively unsuccessful in preventing accounting related corporate jobs from moving offshore to lower cost markets. This is primarily due to the lack of legal protection that the state provides the accounting profession. One does not actually need an accountant credential for most types of U.S. corporate accounting related work. However, one does need a medical credential and license to practice medicine. The legal protections that the medical profession has garnered through its historical interaction with government have made these jobs much less likely to move abroad: significant structural and legal barriers of entry exist for offshore firms aiming to provide these services.

By the 1950s the radiology profession secured exclusive rights to interpret medical images by excluding engineers and physicists from medical radiography, barring other physicians from interpreting images, and by controlling the education and registry

of radiology technologists (Barley, 1986; Larkin, 1978). The interaction of medical professional associations, government regulators, managed care groups, and the increased bureaucratization of the healthcare field have led to a number of constraints on international teleradiology. Specifically, factors such as Medicare's restrictions on paying for teleradiology interpretations outside the country; credentialing by managed care organizations; privileging of teleradiology providers by hospitals and healthcare organizations; licensing by state boards; and malpractice costs and restrictions were most restrictive (Forman, 2006). A mark of just how effective the U.S. radiology profession has been in protecting its monopoly through legislation and regulation is the fact that it has had difficulty increasing staff levels to meet labor shortages and increased service demand.

In medical services, medical credentials establish a ceiling above which firms cannot upgrade even if they have the skills to provide those services. The practice of credentialism in general disproportionately excludes groups who lack access to higher education, reproducing existing social divisions, particularly along class lines (Collins, 1979). An adherence to credentialism also disadvantages those who migrate across borders, where previous professional credentials are no longer recognized. While the rise of IT enabled services has opened up new opportunities for workers in developing countries through offshore work, it also extends professional authority and the potential for labor market exclusion through credentialism and professional authority. This is of particular relevance to the endeavors of foreign trained or certified radiology professionals. The GRC has Indian radiologists that were professionally trained for higher level, interpretive work and are capable of providing those services to India as

well as to other more developed economies. Both the GRC and Teleradiology Solutions provide high value interpretive radiology reporting services legally to practices in Singapore using Indian radiologists. The lack of recognition of an Indian medical credential in the US market creates a ceiling on skill upgrading, locking the GRC into lower value work than their training prepared them for, preventing firm level deepening of skills.

When compared to the less restrictive arena of financial services, the implications of the limitations placed on medical services become increasingly apparent. It is not only the potential for growth and success that are limited by such restrictions in the medical field, but also the conduits available for knowledge transfer, which I have suggested is a key mechanism for upgrading more broadly. In high value financial services, such as financial planning and analysis, the required educational profile is less specialized, requiring a bachelor level degree, although an MBA or Chartered Accountant credential may be preferred. However, due to the more generalist education and training in financial services, there is a need for significant on the job training. This is where the link between the power of credentialism – its ability to set standards and limitations – within a particular industry and the specific interfirm knowledge transfer practices that firms engage in emerges. In order to provide the training necessary for offshore firms operating in the financial services industry, some firms (particularly firms engaged in activities like those of Infosys, described below) commonly visit the client site to learn the skills required for financial processes – a practice I return to in my discussion of knowledge transfer mechanisms below.

Medical services, on the other hand, require medical licensure, federal and state

regulations concerning qualifications, insurance, payment, and privacy regulations. These requirements in medical services impose more significant barriers for finding qualified employees, building trust and credibility, and signing long-term contracts. These constraints, and the potential harm of making mistakes in medical care, mean that that it takes longer to get the commitment of new customers to work with offshore service companies. In order to do business, teleradiology firms must spend significant amounts of time to build relationships and trust. This makes short-term trial runs of teleradiology services prior to a longer-term commitment impractical. Financial services, on the other hand, have fewer hurdles; clients are able to try out short-term or ad hoc projects before committing to a multi-year contract.

While formal post-secondary education may provide only limited preparation for employees of offshore financial service firms, employees in the offshore radiology industry gain a significant portion of the skill required to provide services through their formal educational training, residency, and the credentialing requirements imposed on practicing radiologists. Radiologists become proficient in providing services while undergoing medical educational training and residency, which provides them with necessary experiential and tacit knowledge.⁸¹ Of course, firms providing radiology services to clients abroad still need to learn the requirements dictated by law as well as the particular style and manner of service delivery that such offshore clients require. However, this means that interfirm knowledge transfer is secondary to the credential, training, and expertise that the radiologist gains during his or her training.

A final perceived limitation of note relates to the H-1B visa, which is granted to

⁸¹ Explicit knowledge is easily codified into words and numbers, while tacit knowledge is more difficult to express. Michael Polanyi captures the crux of this distinction in his declaration: “we can know more than we can tell” (M. Polanyi, 1967, p. 4).

skilled professionals from foreign countries who work in the U.S. These visas have been met with criticism in the U.S. for a number of reasons, among which is the perception that this visa is essentially an “outsourcing visa.” This critique implies that the primary use of the H-1B visa is to facilitate transitions to offshore outsourcing processes. As a result of this criticism (and other unrelated security concerns follow 9/11), the availability of such visas has been restricted. Although such a restriction could be seen as a potential limitation on upgrading processes for workers and firms from developing nations, in fact the critique seems to be misplaced and thus the effects of the restriction are limited. As noted below, most Indian workers who come to the U.S. to participate in the transition process to offshore outsourcing stay for periods of about two months. As a result, they typically use two-month long business visas, which are much easier to get approval for and take less time to secure. Business visas take approximately three weeks for approval in the U.S. (equivalent visas take only one week for approval in Europe), whereas the H-1B allows for a longer stay but can take up to a year to be approved.

Bearing the aforementioned restrictions and their implications in mind, then, in the following sections I look specifically at the knowledge transfer processes at work in first, financial services, and second, teleradiology services. In each section, I focus in turn on the specific firms with which interviews were conducted.

III. Knowledge Transfer in Financial Services: The Case of Infosys Knowledge Services

Infosys is one of the largest IT and ITES firms in India and has over 100,000 employees, most of whom work on IT related projects. Ten percent of the company’s

revenue comes from its Business Process Outsourcing (BPO) business (personal interview, Executive, 12/10/08). Within the BPO group there are about 1000 employees working in its “Knowledge Services” division and roughly 70 percent of the services they provide are skill intensive financial services (personal interview, Manager, Infosys, 11/23/07). Infosys hires employees such as chartered accountants and MBAs, although they also hire some “commerce graduates” that do not have post-graduate degrees.

Infosys’ method of transferring knowledge depends on its clients and reflects the company’s background in delivering large scale, lower value back office services. According to an Infosys Executive, the “clients are involved in knowledge transfer... [they] train up people and transfer knowledge” of their systems and processes to the firm (Executive, Infosys, 12/10/08). Infosys provides finance and accounting services to a broad range of MNCs, but began moving up into more skill intensive financial planning and analysis services around 2005. The movement of employees between the client and offshore firm is the primary conduit through which knowledge is transferred. This approach is used in both lower value and higher value services. Business processes are highly specific to a client-firm, developed over time through the interaction of specific routines, processes, and the inheritance of “legacy” IT systems and procedures through mergers and acquisitions. In order to learn the intricacies of a firm process, a period of learning through client visits and training is required; during this period, the offshore firm learns client-specific processes. This is necessary even where these processes are later improved or reengineered following an offshore transition.

Infosys BPO uses the traditional “train-the-trainer” approach to transfer knowledge, regardless of the skill intensity or the complexity of the work process. The

company's move into knowledge intensive services grew out of a stepwise movement upward from BPO services into the provision of higher-value and more complex financial services to one of its large and long-term U.S.-based manufacturing clients. In 2006, Infosys formally packaged the knowledge intensive financial planning and analysis services it provided this client to other clients as a new service offering.

Infosys uses a proprietary BPO transition methodology, called "Proton," which standardizes the steps required to move a client's services offshore. This methodology is applied to KPO client engagements as well as lower skill BPO projects. The task of guiding offshored work processes into a "steady state" usually takes two to three years out of an average five-year contract, although the actual transition of services from client to vendor takes about one year. Throughout the knowledge transfer process, Infosys employees manage multiple roles: acquiring knowledge, documenting knowledge, and applying knowledge (personal interview, Project Manager, Infosys, 11/29/07). The five steps involved for knowledge transfer are detailed below in Table 4.2 (personal interview, Project Manager, Infosys, 11/29/07; personal interview, senior manager, Infosys, 1/4/08).

Table 4.2: Infosys Five Stage Project Approach to Process Transition

	Stage	Work performed
1 st	Discovery	<p>Document client work processes:</p> <ul style="list-style-type: none"> • Infosys engages in close observation (i.e. “shadowing”), interviews employees, and reviews materials describing work process. • Most intensive part of knowledge transfer process, but incremental knowledge transferred in subsequent interaction. • Send 25-30% of offshore work force to client site for 1 to 2 months. • Relationship building between cross-national teams.
2 nd	Transition plan	<p>Create transition plan</p> <ul style="list-style-type: none"> • Codifies information collected during discovery and breaks it into smaller employee-level steps
3 rd	Training	<p>Offshore labor trained on client work process (i.e. “train-the-trainer”)</p> <ul style="list-style-type: none"> • Transition team returns to India to train the rest of offshore team. Each returnee trains 5 employees over 4-week period. • Variations in model may be used to reduce loss of tacit technical “know-how,” during transition and training stage
4 th	Parallel run	<p>Offshore & client teams compare work output for inconsistencies</p> <ul style="list-style-type: none"> • Work conducted at the client and offshore locations are compared to monitor for quality and efficiency before client processes are disassembled. (ex. client and offshore firm may run same financial reports to check for irregularities)
5 th	“Goes Live”	<p>Service delivered exclusively from offshore location</p> <ul style="list-style-type: none"> • Process run exclusively offshore. • Offshore team held accountable for terms specified in service contract.

The transition process described in the table above usually takes about a year. During this time the client’s workers are busy teaching and the offshore workers are busy learning work processes. The second year of service delivery is called the “steady state stage.” Now, the offshore vendor works independently and refines the process to address quality issues. During this stage, the client’s workers may continue in an oversight role, be redeployed to other projects, or be fired.

An important shift takes place during year three of the relationship. After

completing a year of successful service delivery, Infosys begins the *process innovation and improvement* stage. This stage has significant implications for our understanding of the role of knowledge transfer in upgrading. At this point, the degree of offshore firms' dependence on client firms for knowledge may diminish; this can be compared to the limited dependence-relationship observed during the outset in the case of Evalueserve, discussed in the following section. During this phase, Infosys looks for ways to make the clients' work processes more efficient and reduce the number of full-time employees required for this work. Although reduction of employees means that Infosys may accrue fewer billable hours and therefore less revenue in the short term, the company is not concerned about negative effects on its own viability that may follow because, according to sources, it is confident that it will get more work from the client in the future (personal interview, senior manager, Infosys, 1/4/08). Process improvement and reduction in employees dedicated to providing offshore labor occur in two ways: through automation, which reduces the workload through technology, or through the deskilling of work (for an overview of the deskilling debate see (Attewell, 1987; Braverman, 1974; Form, 1987; North, 1990; Vallas, 1990).

The deskilling process – a process by which the degree of skill or the number of skilled people necessary to complete a task is reduced – is described by a senior manager in the following way:

[...] we will pick a piece of work and then we will convert that piece of work into such a process that earlier it was 100 people of the same profile running that work and then divide that work into 15 to 20 people in the top notch [level] who are doing that work in a particular way and another 80 doing [the] low-end piece of it. (personal interview, senior manager, Infosys, 11/23/07)

According to the same source, “the pace of this happening will definitely grow much faster [in the future].” Thus, deskilling of knowledge intensive services is a goal for Infosys, which this manager sees as becoming increasingly important to future industry competitiveness. The observation that deskilling is occurring in the industry, however, does not necessarily preclude upgrading. A firm can move to higher value work, while splitting the tasks necessary for upgrading internally into high or low skilled jobs. Yet, the recognition that deskilling within the industry is already underway and expected to intensify suggests that alienation amongst Indian workers, even within firms or divisions specializing in knowledge intensive services, may rise over time. This suggests that knowledge workers, who tend to enjoy higher levels of autonomy, are not immune to deskilling, which is more often associated with lower value service worker.

It may seem surprising, given the potential profit motivations that accompany the deskilling process, that deskilling occurs only after the transition process is over, rather than during the documentation period, when it could be relatively easy to restructure the work process. However, the unique structure of knowledge transfer processes during the offshoring transition points to reasons why such an approach may be less appealing, both for the client and vendor. The potential risk to quality service delivery in the early stages of the relationship makes early deskilling too dangerous a proposition for service providers and clients, alike. One implication of this variation on a more typical pathway to deskilling that takes place in domestic industries is that a greater number of Indian workers end up being trained in processes and practices that require higher skills. Perhaps inadvertently, the slower development of trust and time needed to adapt to the offshore relationships prior to deskilling may limit the potentially deleterious effect of deskilling

on overall skill and knowledge upgrading in a developing country providing offshore outsourcing services.

IV. Knowledge Transfer in Financial Services: The Case of Evalueserve

Evalueserve is a research company delivering customized services in financial, investment, business, and market research.⁸² The firm is one of the largest Knowledge Process Outsourcing (KPO) companies from India. The central aim of Evalueserve's business model is to perform the bottom 70 to 80 percent of the work that a traditional investment bank, retail bank, or consulting company does at about one third of the cost. The firm does not handle negotiations or do audit work, as US investment and retail banks traditionally would, nor does it provide recommendations or implementation support, as domestic consulting companies typically would. Even after the global downturn, financial services still constitute roughly 40 percent of the firm's total revenue (personal interview, Executive, 5/22/09). It has over 2200 employees, including over 1700 research analysts, most of whom have advanced business or technical degrees; these include engineers, MBAs, intellectual property lawyers, medical doctors, PhDs, chartered accountants, statisticians and other top-level professionals (Interview, 5/22/09). Among these, chartered accountants and employees with MBAs perform most financial services.

The primary initial source of knowledge for the firm Evalueserve was its founders' education and work experience abroad with top MNCs. In particular their most recent work experiences prior to the formation of Evalueserve allowed them to develop and test ideas that they later developed into a plan for new business.

⁸² Evalueserve also provides Intellectual Property, Legal Support Services, Supply Chain Support Services and Knowledge Technology, but these were beyond the focus of this study.

Additionally, their knowledge and expertise in providing services to former clients and their networks (which include clients) helped them establish themselves in knowledge intensive services. This blend of education and experience is evidenced by the biographies of the following key figures in the company, including:

- The Chairman & Co-founder received his PhD in Computer Science from the Johns Hopkins University and a Bachelor in Technology (B.Tech.) in Electrical Engineering from the Indian Institute of Technology, Delhi. Prior to the formation of Evalueserve, he served as the Director of Emerging Business Opportunities for IBM Research Division Worldwide.
- The CEO & Co-founder of the company received his MBA from INSEAD, France and Masters in Telecommunications from the Swiss Federal Institute of Technology, Zurich. He was a Principal with McKinsey & Co, spending 20 months in the Delhi office in charge of the McKinsey Knowledge Centre.
- The COO of Evalueserve, who was the company's first employee and was designated to be in charge of India's country operations, received his MBA from Carnegie Mellon University and a B.Tech in Mechanical Engineering from the Indian Institute of Technology, Delhi. Prior to starting his own technology startup, he worked at McKinsey & Co.

The importance of these founding members' educational backgrounds and work experience is tied, in part, to the type of work that Evalueserve engages in. Because of the nature of this work, the client-vendor knowledge transfer processes described as central to Infosys's practices are less necessary. Instead, having a strong initial basis for both knowledge and networks with Western clients, such as McKinsey and IBM, as indicated by the brief biographies above, proves particularly important.

The process for transitioning financial services at Evalueserve is significantly different from the process described at Infosys because the scope of work and source of data for the work differs. Evalueserve produces customized research that is distinct and separate from other client work processes and utilizes public databases or its own proprietary databases, rather than the client's databases. Infosys' Knowledge Services

division, on the other hand, specializes in large-scale projects that usually entail taking over a process that utilizes client databases and data. Most of Infosys Knowledge Service customers are clients of other “mainstream” Infosys services in BPO or IT services. This means that the significant work and coordination that needs to occur to gain access to these databases is already done, and Infosys is just adding more analysis to the data they may already be working with. This is in fact how the company moved into knowledge processes services in the first place, by adding more analysis to the accounting reports it was already processing off of an existing client’s financial data servers.

A BPO “transition” involves moving a whole process offshore in a step-wise fashion as was described in the Infosys approach above. A senior manager responsible for transitioning services explains that “transition” has a different meaning and associated practices at Evalueserve:

So here, the use of the word ‘transition’ when we use that it means sort of working out the scope of whatever activity research that we plan to do with the client . . . but nothing actually physically, like a process, actually moves from onshore to offshore. It is actually a discrete piece of work. The project could be a research piece, could be doing equity research, building a pitch book, it could be any of those tasks (personal interview, Chief Transition Officer, Evalueserve, 2/14/08).

The fact that the work is distinct and separate from broader client work processes means that there is less integration and coordination required between the client and Evalueserve for successful service delivery. The research activities that Evalueserve provides are often “value adding” activities that are not usually part of the daily business activities of the company. One of the primary services the business research division at Evalueserve offers, for example, is market analysis, where the firm studies an industry, “analyzing the market, market size, [business] drivers, estimates, competition, profiles, key trends, news,

so on and so forth” (personal interview, manager, Evalueserve, 2/13/08). This type of analysis helps executives identify future opportunities and craft business strategies. These are important forward-looking functions within the firm, but they are not part of the daily work routine that must continue in order to keep the firm functioning. A senior manager at Evalueserve estimated that about 30 percent of the firm’s projects were collaborative efforts, through which it helped the client to figure out a new service or process that was to be delivered abroad. Designing these new services is more difficult because the client, having no experience in the specifics of the services, is unable to offer a “blue print” to base these processes upon. This makes it a more difficult service transition because it requires more skill, analysis, and creativity in figuring how to do the work.

Evalueserve’s approach to client service is much less defined than the transition process outlined in Infosys’s transition methodology above. This is because it is difficult to standardize the production of research into series of steps, as is common practice in traditional BPO services. Just as adhering to the scientific method does not in itself produce useful research, so too is it difficult to follow a specific method in offering the types of services in which Evalueserve specializes. A scientist’s research may be guided by the scientific method, but following the scientific method without additional direction, expertise, methodological training, and data, will not provide the scientist with the substance and knowledge required to produce and execute a viable research project. Evalueserve, then, requires a more flexible and dynamic approach to its service provision, which in turn cannot rely on the same sorts of knowledge transfer processes Infosys employs.

In addition, since Evalueserve does not typically use client-supplied data, it

diverges from a scripted approach to service provision observed at Infosys and other BPO projects (Infosys's five step approach described above is a case-in-point of such a "scripted" approach). Instead, because it typically relies on public or proprietary databases to produce its research, the relations of dependence between Evalueserve and its clients diverge from those of Infosys and its respective clients:

Most of what we do, we use our information sources are publicly available, right? So, we are looking at company reports, we are looking at other analyst reports, coverage and news, we speak to people, we speak to companies if we are doing equity research. So it is much easier actually in some sense to outsource because most of what we do we are not using any private data. A lot of what we do, actually I would say 95 percent of what we do, uses publicly available data. (Chief Transition Officer, Evalueserve, 2/14/08)

Because Evalueserve uses its own data or public data, the company is much less reliant upon learning from the client. In contrast, Infosys employees must learn a number of sequential steps from clients in order to gain access to and correctly manipulate data from client IT systems. Clients often have old "legacy" technologies and databases that are difficult to integrate across the company. This often forces the company, and any external service provider, to carry out work in accordance with specific firm and technology routines.

For similar reasons, Evalueserve employees do not necessarily or regularly need to visit the client site in order to learn how to serve the client. This is because the work tends to be discrete, narrower in scope, and does not require gaining access to or using client databases. Evalueserve employees have the autonomy to conduct research in a number of different ways that may differ substantially from clients' traditional approaches. In a typical BPO set up this may not be possible due to technical or organizational constraints that make it difficult to adopt alternative processes. Or, such

autonomy may be compromised by the clients' desire to exert a degree of control over the work process, which is documented in call centers (Lloyd & Payne, 2009)

While for Evalueserve, it is not standard procedure to have employees visit the client site at the outset of a project or longer-term relationship, client visits may occur if the client or project requires it. Whether Evalueserve employees visit or not, or when in the business relationship these visits may occur varies widely from client to client; sometimes employees will never visit a client (personal interview, Asst VP, Evalueserve, 2/13/08). A long visit for an Evalueserve dedicate team employee is 3 to 4 weeks, which is shorter than the typical client visit made by Infosys employees, which again suggests that H1B visas are not a necessary route for knowledge transfer in these knowledge intensive services. It is noteworthy that Evalueserve employees visit the client later in the business relationship, rather than the beginning of the project, which is the norm at Infosys and BPO firms more generally. Instead, Evalueserve workers may visit the client site to *help the client* during its annual busy period, rather than to learn a new process that will then be moved offshore. Similar to Infosys, Evalueserve finds that these client visits help employees become "more attuned" or familiar with the personalities of clients, the pressures of their work, and a general sense of the offshore client environment (Asst VP, Evalueserve, personal interview, 2/13/08). Yet, the purpose of such visits is quite different in the case of Evalueserve, where knowledge transfer may travel in the opposite direction from that which takes place in Infosys's case.

Another significant difference between Infosys and Evalueserve is the scale of the client engagement, which has implications for interfirm learning and knowledge transfer. Infosys BPO tends to carry out bigger projects; even in the Knowledge Service division

where projects are smaller, the firm still has projects with up to 300 full-time employees. Evalueserve's projects are much smaller, with a five to ten full-time person team considered a large opportunity. When dedicated teams start, they are generally two to three full time employee teams (Asst VP, Evalueserve, personal interview, 2/13/08). With large teams, diffusing client knowledge becomes more complex and difficult and, as a result, companies that specialize in larger team opportunities need to have a more robust knowledge transfer process.

V. The Politics of Medical Services Offshore Outsourcing

Before discussing the practices of knowledge transfer present in the medical services industry – specifically the teleradiology industry – it is worth noting the complex and controversial context within which firms engaged in these services have been operating. By 2000, the U.S. radiology profession faced an acute shortage of qualified radiologists, which made it difficult for hospitals and practices to adequately staff radiologists, particularly during night and weekend periods when few radiologists want to work. Demand for teleradiology services in the U.S. increased due to this shortage (Sunshine & Meghea, 2006) (See Tables 4.1 & 4.2) and as a result of other factors, including declining reimbursement, increasing demand for services, and the rise of U.S. based teleradiology firms (Yee, 2008). While lower teleradiology costs were attractive to administrators seeking to cut costs, it was the difficulty in staffing radiologists and the proliferation of Internet connectivity globally that made it increasingly possible to solve this labor shortage by using radiologists living abroad.

Despite the increased demand for teleradiology services and the limited supply of

U.S. radiologists, there were a number of constraints that slowed the movement of teleradiology services offshore relative to financial services. One of the biggest constraints was public and professional resistance to international teleradiology. Offshoring medical services has proven to be a particularly contentious form of outsourcing for a several reasons: concerns over service quality, the quality of training and foreign credentials, client privacy concerns, international jurisdiction over malpractice lawsuits, and perceived threats to the U.S. domestic monopoly over radiology services. The rise of Indian teleradiology targeting the U.S. market encountered fierce resistance from both inside and outside the radiology profession. This resistance to international teleradiology surfaced in the news (Pollack, 2003), books opposing outsourcing (Dobbs, 2004), and radiology blog discussions (i.e. AuntMinnie.com). Within the profession in the U.S., such opposition was found in guidelines offered by the American College of Radiology stating that outsourcing should be limited to U.S.-licensed, hospital-credentialed providers with malpractice coverage and, preferably, board certification (Thompson, 2004), and at the 2004 Radiological Society of North America (RSNA) professional meetings (Thrall, 2004). In addition, each teleradiology firm from this study reported receiving “hate” mail. These firms have been caught up in political backlash against outsourcing that particularly targeted teleradiology services.⁸³ Fears regarding outsourcing, however, began to recede within the radiology profession after peaking in 2003-2004. The primary reason for the decline in concern amongst the profession came after the opening presentation at the 2004 Radiological Society of North America titled “Outsourcing: Threat or Opportunity?,” which argued that there were not

⁸³ Both Infosys and Evalueserve experienced some resistance to offshoring work from developed markets, however, the GRC and Teleradiology Solutions reported much more focused attacks targeting executives, employees and high profile customers of international teleradiology services.

enough U.S. certified radiologists offshore to pose a significant threat to the profession's hold over these services in the US domestic market (Thrall, 2004).

Recent studies of the radiology profession point to increasing adoption of independent teleradiology nighttime services amongst hospitals and practices. One study found that in 2007, 44% of practices used off-hour teleradiology services compared to 15% of practices in 2003 (Lewis, Sunshine, & Bhargavan, 2009). A related study found that 40% of US radiology practices outsourced teleradiology readings in 2007 and that these services constituted an average of 11% of the workload for these practices and 4% of the total workload of radiologists nationally (Huffman, Lewis, Forman, & Sunshine, 2010). Outsourcing of teleradiology has grown, but it still remains a small overall percentage of the total radiology workload. The break down between domestic outsourced teleradiology and international outsourced teleradiology is not reported in available studies. However, Dr. James Thrall, Radiologist and former president of the RSNA, estimated that 85 to 90% of outsourced radiology is domestic, which only leaves 10% to 15% going offshore "to Australia, Israel, a little bit to Europe, a tiny bit to India" (Thompson, 2004).⁸⁴ The statistics on the growing adoption of teleradiology point to the larger issues behind industry resistance to *international* teleradiology.

The problem with international teleradiology was not so much about "outsourcing," since the use of domestic "nighthawk" services has become common and was not a major part of the controversy in 2003-04 within the radiology profession.⁸⁵ The

⁸⁴ In addition, two of the largest domestic teleradiology firms that recently merged suggest that they have secured a significant section of outsourced teleradiology work. U.S. based teleradiology companies [Night Hawk](#) and [Virtual Radiologic](#) have a combined 325 radiologists serving 2,700 healthcare facilities across 50 states, and reading approximately 6 million studies annually (2010).

⁸⁵ There were 3 posts on the radiology message board referring to one domestic outsourcing dispute where the American College of Radiology (ACR) was asked to intervene (Forrest, 2007). No other controversies about domestic teleradiology were uncovered on the message board.

controversy was also not about “offshoring,” since international teleradiology firms carried out operations in Israel and Australia for a few years prior to the rise of Indian international teleradiology without controversy; these countries’ operations did not capture much attention before or after the news reports on Indian teleradiology began. However, the relocation of offshore teleradiology services to India was part of a perceived broader movement of white collar and professional jobs moving to India. This movement of jobs abroad, specifically to India, whether perceived or real, remains a domestic preoccupation that is often a hot button issue in political campaigns and debate.⁸⁶ Because of its “third-world country” status and the assumptions that accompany such a status, Westerners call into question India’s credibility as a provider of medical services, despite the growing sophistication of medical facilities and training evident in the country.

Thus, the political realities facing Indian-based teleradiology services forced companies to adjust their business strategies. Moreover, in their first few years of operation, many had difficulties finding, securing, and retaining clients. The GRC and its clients faced political backlash substantial enough to lead the firm to scale back plans from higher value teleradiology reporting services, deciding instead to focus on lower value 3D image processing. 3D imaging does not require an American Board Certified Radiologist credential; this decision, then, eliminated competition with the American Board Certified Radiologists who exert significant control over the profession. With its first customer, Teleradiology Solutions, too, faced controversy over offshoring of services to India. This controversy became so contentious that the firm ultimately lost

⁸⁶ The subject of offshore outsourcing was vigorously debated leading up to the 2004 Bush-Kerry presidential election.

their initial customer.

VI. Knowledge Transfer in Medical Services: The Case of Global Radiology Centre

The initial business plan for the GRC was to include offshore radiology reporting. However, the inability to find credentialed radiologists to serve the American market along with the political backlash directed at Wipro, the GRC's parent organization, and their U.S. based customer caused them to scale back the initial plans to offer radiology reporting and to focus on the 3D image manipulation instead:

We started out thinking that we would establish a center for the actual interpretation of radiographic studies So ambitiously we thought we would set up our own night coverage service in India because its 12-hour time difference and that premise turned out not to be a good one for the simple reason that we could not find enough American-trained and Board Certified radiologists who were willing to move to Bangalore, and so, having demonstrated that we could create a seamless link between Massachusetts and Bangalore We looked for other ways to exploit the technology and that is when we came to the idea of training people in India to do the 3D image processing for us (personal interview, Chief Radiologist, large multispecialty hospital, 8/27/08).

3D visualization is a service that is growing in demand because it “enables faster and more confident diagnoses and treatment decisions, and quantitative analysis and computer-aided detection can provide more accurate and reliable treatment planning, staging, and assessment” (Ridley, 2008). According to a Director of 3D Imaging Services at a large multispecialty hospital, 3D visualization can “improve patient care, increase clinical confidence, and reduce time, cost, and invasiveness” (Ridley, 2008). 3D imaging services are growing in demand because they help radiologists diagnose and treat abnormalities uncovered in radiology imaging services, such as in X-ray, CT, and MRI scans.

It was not only the dearth of qualified American Board Radiologists in India that

caused the GRC to abandon the offshoring of radiological reads to India, but also the resistance and political backlash targeting the management of GRC and their biggest client. Two healthcare executives using the GRC's services received a number angry e-mail messages, most of them anonymous, urging them to stop outsourcing radiology work to India (Pollack, 2003) (Personal interviews, Practice Head, GRC, 10/17/07; Radiologist-in-Chief, large multispecialty hospital, 8/27/08). The resistance to radiology outsourcing, and the GRC (and Teleradiology Solutions) specifically, was also particularly virulent on the radiology message board, AuntMinnie.com. The fact that the GRC and its customer were subjected to such angry resistance is somewhat puzzling given the fact offshoring of teleradiology from other locations was already an established practice. Non-Indian international teleradiology practices were not criticized on the profession's message board or in news stories:

You know, we are not pioneers in teleradiology to be honest. Australia, Belgium, Israel, have all been doing it for fifteen, twenty odd years . . . unfortunately for us we were stuck in this larger political battle about outsourcing to India where we got beaten up badly (Personal interviews, Practice Head, GRC, 10/17/07).

Clearly many professional insiders had a problem with *Indian* companies providing these services, relative to international teleradiology operations in other developed countries. Another primary concern amongst the radiology profession was that "night hawking" would turn into "day hawking," thereby increasing radiology competition over daytime work. According to Dr. Saini of Massachusetts General, "people want to protect their turf, but it's very interesting that that turf battle stops at 5 p.m. on Friday. How many people say they want to do this thing on Saturday and Sunday?" (Pollack, 2003). With this context of controversy in mind, we can now turn to the knowledge transfer processes at the GRC.

The knowledge transfer mechanism that enabled the GRC to provide 3D Lab work to US clients was the training of two Indian radiologists by the client. This included subsequent travel to and from the Bangalore based 3D lab and its client. The GRC was founded in December 2002. After performing pilot projects for a few months, the firm began service delivery at the end of April 2003. The supervising radiologist was the first to go onsite, learn the processes, replicate them at the client site to their satisfaction, and then return to Bangalore to begin providing those services offshore. As in the case of the “train-the-trainer” method used at Infosys, the supervising radiologist used this client-based training to train other Indian radiologists in 3D lab work. After a year of providing services, supervised by the overseeing Indian Radiologist at Manipal Hospital, the GRC was performing 1 to 2 images (“protocols”) for their client and experiencing some quality issues from the client’s perspective.

In 2004 another Indian doctor who had worked at the client’s 3D lab joined the GRC and helped the firm to improve service quality and expand into the manipulation of new types of 3D images. This doctor became the primary trainer for the rest of the GRC medical staff. He had received first hand training from the experts at the GRC’s main client as the new company was forming. Having previously been a research fellow in the Gastrointestinal Department of Radiology in the client’s research hospital, he decided he wanted to move away from research and instead started to learn 3D lab work. In making this personal professional transition, he was trained by the client’s best technologist in the lab for 4 months. He explained, “[W]hatever protocols she had set, she imparted that knowledge to me and I practiced and got good at it and then in about 6-7 months, I was

like as good as one of the technologists over there” (personal interview, Radiologist, 11/28/07).

After a year, the GRC’s capacity for 1-2 protocols, MRIs of the head and neck, expanded to include 13-14 new protocols, including CT scans of head and neck, stroke, and perfusion, which all together constitutes the highest volume of services from the client. Quality also improved:

I knew exactly what they wanted, and how they wanted the image to be, and I just replicated exactly the way [technologist name] used to do it over there. That way everybody got up to speed with the protocol. . . . quality improved much faster once I came back here (personal interview, Radiologist, 11/28/07).

Quality improvement, according to this source, is difficult because it often relies on tacit knowledge that, by definition, cannot be easily conveyed. Thus, the radiologist’s direct experience of being trained by the client-expert facilitated this improvement, which otherwise would have been difficult to achieve.

Knowledge transfer from a large-multispecialty hospital was crucial in generating client confidence in the GRC’s offshore teleradiology capabilities. According to the key decision maker at the GRC’s client,

What really facilitated this was we were able to find a key radiologist in India who actually came to United States and spent many weeks training to give the 3D processes and he then returned to India and shared that knowledge with his colleagues. So, in the United States, a technologist typically does this work, but in our setup in India, an Indian radiologist actually does this 3D processing, but no interpretation is done. Strictly, computer processing (Personal interview, Chief Radiologist, large multispecialty hospital, 8/27/08).

The GRC depended on its biggest customer to teach employees how to provide 3D visualization radiology services for three reasons. First, Manipal Hospital, which is where the technical labor from the GRC came from, had less exposure to cutting edge technical radiology equipment and methods compared to its largest U.S. based customer. Second,

and more importantly, the Indian Board Certified Radiologists performing 3D visualization did not have experience with this work and needed to learn the practice of manipulating 3D scans. As noted above, the GRC relies heavily upon using Indian certified radiologists who are not trained in 3D imaging techniques – techniques that are typically performed by lower-skilled and less educated technologists. While technologists are trained on use of radiology equipment, recognizing anatomy (Barley, 1986), and image processing, unlike radiologists, they are not trained to interpret the images that they help capture and manipulate. Currently there are four Indian radiologists and four technologists in the GRC performing 3D scans, but the technologists work is audited by the radiologists who supervise them, which further underscores the importance of the 3D training for the Indian radiologists themselves. Third, the Indian Board Certified doctors also needed to learn how to provide 3D processing in a way that conformed to the established practices of their client, which required training from clients.

Once training was complete, the GRC spent multiple months conducting a pilot project to ensure quality standards were met. During the initial period the supervising radiologist conducted all 3D services, although additional Indian radiologists and technologists were hired and trained in subsequent months and after the pilot program the supervising radiologist moved into a supervisory role. During the pilot program the 3D images were manipulated, but were not uploaded live onto the client servers. Instead, the images manipulated in India were checked against the renderings performed by client's staff of technologists. This stage began at the end of April 2003 and lasted 6 months. Finally, the company took over the night and weekend coverage and began to upload

manipulated 3D images onto the client's server in real time. The GRC has thus far completed over 31,000 cases.

As the relationships between an offshore vendor and its client develop, and as the offshore firm builds upon the knowledge gained through early-on knowledge transfer, the *direction* of knowledge transfer may in fact shift. Though, as noted above the client-vendor relationship provided crucial support to GRC as its employees gained skills and improved the quality of services, eventually knowledge has flowed back to the client. The GRC provides its clients with skills and knowledge by helping to train new employees at the client site and by providing technologists both onsite and offshore access to the advanced medical training of radiologists performing 3D image processing. Hiring a person to train new technologists at the client site is difficult for the client because of a shortage in personnel, the ongoing workload for experienced technologists, and the expense of using onsite labor. As a result, one of the radiologists from the GRC carries out the training for new technologists who just joined the 3D lab at the client site (personal interview, Radiologist, GRC, 11/1/07). While this arrangement is informal, it entails an outsourcing of client training to the GRC, which is already providing night and weekend 3D processing.

The outsourcing of training is superficial, in a sense, because the transfer of knowledge from the offshore vendor to the client only applies to inexperienced employees who are being trained. In fact, the skills and knowledge that the training is meant to impart are skills that already exist at the client site, but are not yet embodied in newly hired employees. The main function of the Indian trainer, then, may not be to impart "new" or previously unavailable knowledge to the trainees, but rather to be a

conduit for recirculation of existing knowledge within the client company, that is encumbered to do so itself due to personnel or time constraints. Moreover, while the Indian radiologist is at the client site for two months for the purpose of training technologists, he often learns new approaches that are taken back and disseminated to his other teammates in India. According to the GRC business manager, there is a,

rotational training program of people going abroad and coming back and cross training each other. So, it can be a knowledge sharing either ways [sic]. So, when some goes there, he may train a fresh bunch of people, but come back with knowledge about some enhanced protocols and then share it back here (personal interview, GRC, 10/17/07).

In this case, the exchange of knowledge is seen to be an interactional process that occurs back and forth between the client and the vendor, with both learning incrementally through the shared interaction.

The Indian vendor also transfers deeper technical knowledge back to the client by providing the client 3D processing performed by formally trained India based radiologists. The client's own staff of technologists becomes more effective to the client's team of radiologists by gaining access to the clinical expertise of Indian radiologists whom they consult and interact with on a recurring basis:

The majority of the radiologists [at the client site] . . . view the 3D techs here as a additional set of eyes, looking at the anatomy . . . the techs here can pick up those pathologies and working with the radiologists in India they come trained in the anatomy and pathology. They also become very good at picking up those other oddities. So, one of the hallmarks, I think in the service reports built here is that radiologists can trust that it is not just going to be a pretty picture, its going to be clinically relevant and highlight any pathology that might be seen . . . to develop that knowledge on anatomy and pathology, so using the radiologists in India really helps them (personal interview, Director, large U.S. multispecialty hospital, 8/27/08).

The Indian radiologists at the GRC effectively provide on the job training in anatomy to the client's staff, which helps the U.S. based technologists become more effective in their

job. According to the client, the client technologists become more effective because they gain access to the in-depth clinical training in anatomy that Indian radiologists have undergone as part of their medical education.

VII. Knowledge Transfer in Medical Services: The Case of Teleradiology Solutions

The primary source of knowledge for the firm Teleradiology Solutions was the firm founder's medical education, training that culminated in an American Board Certified Radiology credential, and his subsequent work experience and radiology practice on the faculty at Yale. The founder of the company (the "chief radiologist") received his initial Bachelor of Medicine, Bachelor in Surgery (M.B., B.S.) degree from India's top medical college, All India Institute of Medical Sciences (AIIMS), New Delhi, India. He also received his post-graduate training as a resident in diagnostic radiology, from the same institution. The chief radiologist then received prestigious internships in the United States before beginning his residency at Yale New Haven Hospital, New Haven, CT (1995-1998). He received his American Board of Radiology Certification in Diagnostic Radiology in June 1998. Between 1998 and 2002 the founder worked on the faculty and practiced radiology at Yale New Haven Hospital. When he returned to his native India for personal reasons he took his education and professional experiences with him. From the beginning, the chief radiologist had the skills and the credentials that would enable him to provide radiological interpretation to US practices from India, even if getting the business established and gaining customer confidence in India as a delivery location was more challenging.

Yale provided the chief radiologist with the option to stay on faculty for a couple of years in case he decided to return to the United States. After moving back to India, he maintained his U.S. state licensure and his medical appointment at Yale, and remained up to date on imaging protocols and practices (A. Kalyanpur, MD, et al., 2004). While back in the U.S. during a routine trip to work and teach at Yale, a supervising radiologist in the Radiology Department at Yale expressed his difficulty in staffing radiologists during the night shift. The chief radiologist volunteered to help out by performing this service from India. According to the Teleradiology Solutions founders, this arrangement was attractive to the Supervisor at Yale because the chief radiologist was already faculty at the University Hospital, which meant they knew he had the qualifications and expertise to do the job remotely. In addition, the hospital was confident of the logistical feasibility of reporting from India, since the radiologist's current status meant that he already had access to the computer system, the Picture Archiving and Communication System (PACS), where diagnostic images were stored. Finally, the radiologist's current employment status with the institution diminished concerns over privacy and security.

To increase confidence in a long-term teleradiology reporting from India, the chief radiologist and Yale conducted three feasibility studies assessing the technical and clinical reliability of sending, receiving, and reading large image files sent from the US to India. The first study helped establish the suitability of international teleradiology using compression technologies that reduced download and upload time and minimized bandwidth usage without impacting the image clarity required for diagnosis (personal interview, Founder, Teleradiology Solutions, 1/31/08). A second study tested the feasibility and reliability of conducting offshore teleradiology operations from Bangalore

by comparing the accuracy of transmission of 212 scans from a Bangalore satellite office against the same reads from radiology staff member at Yale's emergency room at night. The findings demonstrated that teleradiology delivery from India was both technically and clinically feasible (A Kalyanpur, Weinberg, Neklesa, Brink, & Forman, 2003).

With evidence from these studies in hand, Yale began sending 5 to 10 clinical cases a day for interpretation to Bangalore, India. In a third study, the founder read body CT scans in parallel with faculty at Yale, which demonstrated the clinical efficacy of the service already being performed (A. Kalyanpur, MD, et al., 2004). The effect of these studies was to help develop the offshore teleradiology business model, provide evidence of its efficacy, and to lend credibility to the idea that these services could be delivered from India, a developing country.

Despite performing as well or better than the emergency staff on site,⁸⁷ within six months, offshoring nighttime scans to India became a controversial issue amongst the Yale staff:

The residents would say, oh that study it was reported in India and the faculty members would go, "My, we don't have a radiologist in New Haven?" So, there was a lot of kind of brouhaha that began to brew within about six months of this actual clinical project starting (Personal Interview, Co-Founder, Teleradiology Solutions, 1/22/08).

While the Yale project stopped, the reliability of this model from India was established; the founders of Teleradiology Solutions decided to continue the business and began to search for new customers. While it was difficult to find new customers, the feasibility studies, and the relationship and training background with Yale helped. "Based on those [feasibility] studies and the response to those studies, I felt that it was something that

⁸⁷ Research studies have shown that radiologists reading scans during the day are more effective than nighttime reads in the Emergency reads (A. Kalyanpur, MD, et al., 2004).

could be of commercial value and that led to the creation of this company and this organization” (personal interview, Founder, Teleradiology Solutions, 1/31/08).

Teleradiology Solutions started in 2002 in a home office in Bangalore, India, with 2 computers and a single radiologist reporting for Yale (personal interview, Co-Founder, Teleradiology Solutions, 1/22/08). By 2004, the company hired another U.S. certified radiologist and performed work for 40 clients. In 2010, the firm had 350 employees located across the world and examined over 2.6 million scans from 75 hospitals in the US and 11 centers in Singapore (Subramanyam & Khan, 2010). Growth of Teleradiology Solutions was constrained by perceptions of India’s suitability for such high level services, legal concerns, and the ability to secure ABR employees in India. Despite this difficulty, Teleradiology Solutions was able to secure additional ABRs to work for the company, thereby enabling the company to increase its capacity to service US based customers. Each of these doctors required minimal technical and cultural training because they already had the medical training and credential required to practice.

Teleradiology Solutions most profitable business is radiology reporting to the US, although they also serve other regions, primarily Singapore and India, and are also building up their European service offering. As a result, Teleradiology Solutions’ core business requires the hiring of ABR *certified radiologists*. There are a total of 13 ABRs, and number of Indian radiologists, that serve over 100 hospitals in the US, Singapore and India. All ABR radiologists underwent US residency training and possess an ABR credentials. Over half of these American board certified radiologists have Indian medical degrees, 3 have US medical degrees, and 1 has a medical degree from the Netherlands.

Some of these radiologists received additional internships and fellowships in the US or in India.

ABR radiologists tend to stay in the United States, where they are credentialed and well paid to practice (starting salary for a ABR radiologists begins around 350K annually). The firm has modified their recruitment and staffing strategy from initially trying to find ABR radiologists returning to India, to a “global staffing” model that utilizes ABR radiologists wherever they are located geographically. Most of the 13 ABR radiologists working for the firm are based in Bangalore, or elsewhere in India, such as Delhi or Bombay (Mumbai), but some radiologists work in Amsterdam, Beijing, and from home in the United States (Interview 40, Executive, Teleradiology Solutions, 1/31/08). This flexible approach to work has helped the company acquire additional qualified radiologists in an industry characterized by labor scarcity (A. Kalyanpur, MD, et al., 2004). Despite the firm’s ability to secure qualified workers, the firm still invests significant resources, time, and infrastructure toward upgrading the skill and knowledge level of its employees, including and particularly those with medical degrees.

VIII. Conclusion

Knowledge transfer is a key mechanism for upgrading of skills and knowledge in the offshore outsourcing industry. This chapter has presented two mechanisms that transfer knowledge from organizations in developed countries to organizations based in India, which result in skill upgrading. The first mechanism for knowledge transfer is the interaction that takes places within client-vendor relationships. This mechanism is characterized by incremental learning within the context of relationships, resulting in a

“slow-and-steady” upgrading trajectory. The second mechanism relies upon the migration of technically skilled professionals that result in a faster, “hit-the-ground-running” type of upgrading trajectory. Although knowledge transfer is crucial for upgrading of skills, certain barriers to upgrading may limit these possibilities, even where knowledge transfer is achieved. There are two constraints that influence these upgrading mechanisms. The first influences the client-vendor knowledge transfer mechanism, which may be constrained by a lack of access to proprietary knowledge, data, methods, processes, and systems. The second constraint cuts along professional divisions that are more pronounced in certain industries, such as medical services, and less so in others, such as financial services. The different routes for skill acquisition combined with structural constraints shape the trajectory of firm upgrading.

In the cases of Infosys and the GRC client relationships with firms in the United States provided the primary mechanism for skill acquisition. Infosys moved from finance and accounting work in the early 2000s into higher value and more interpretive financial planning and analysis around 2005 through a slow-step wise movement that occurred through close client interaction and highly integrated process that developed over time. Infosys was simultaneously enabled and constrained by its dependence upon client knowledge and access to their data, methods and systems. The company depends upon clients to learn how to perform and replicate daily client business services and to gain access to client databases for each project it completes. As a result, upgrading in this case is dependent upon the client’s willingness to share knowledge, provide access to firm data, and methods. This dependent nature of this relationship mean that there could be limits to future upgrading potential.

Within the context of the relationship between the GRC and a large US multispecialty hospital the Indian GRC expanded the breadth of their service offering from one type of 3D image of an MRI of the heart to performing fourteen types using MRI, CT, and X-ray technologies of a number of organs and body parts. This broadening in services unfolded slowly over a 4-year period and was initially constrained by the lack of familiarity the GRC had of client processes when it began service delivery in early 2003. The expansion in service breadth began to accelerate in 2004 when the GRC's Indian radiologist, who was initially trained by the client and received additional client training during subsequent return visits, shared his deep knowledge of client processes and methods with his coworkers.

Evalueserve and Teleradiology Solutions, in contrast, depend on overseas educational background and prior work experience of their founding members and key employees for knowledge transfer. Evalueserve acquired most of its operational "know-how" prior to client interaction, through previous work and educational experience, which allowed the firm to move directly into higher value work from its first project. When the company began its first project in 2001 it was able to complete the work with minimal guidance from the client because the founders worked on similar projects in their previous employment positions at McKinsey & Co. and IBM. In addition, the firm also used publicly available or its own proprietary data sources as the basis for its research, thereby reducing dependence on its clients for learning and data access.

Teleradiology Solutions, like Evalueserve, relies upon the overseas educational background and prior work experience of their founding members and was able to provide these services to its first client. Teleradiology Solutions was able to provide final

interpretations of CT, MRI and X-ray with its first customer from its first day of operations. This was because the radiologist provided the same service from India as he was trained and had experience performing, while he worked in the United States.

Legal, political, and professional barriers to certain industries – particularly in the medical industry, as my study suggests – mean that even where knowledge transfer has occurred – upgrading opportunities in the future may be limited. Nonetheless, it is important to also understand the dynamics of knowledge transfer in these more regulated professional industries in order to understand opportunities in other professional service areas and to better understand the prospects for upgrading in developing countries, and in turn the potential for upgrading within the offshore outsourcing industry to fuel industry development.

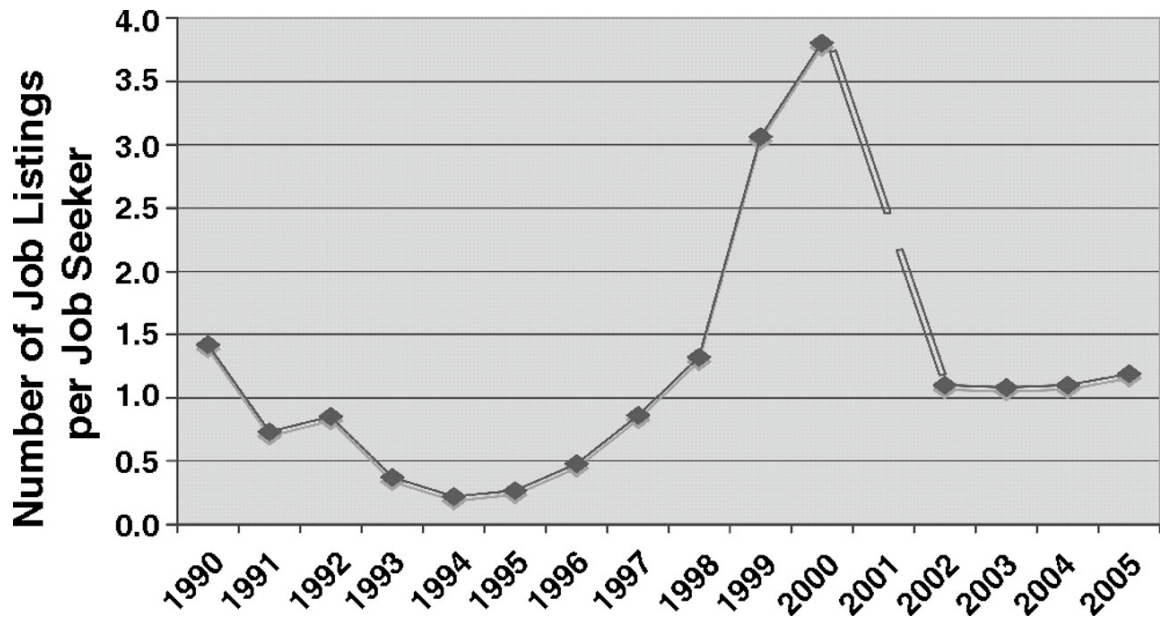
In medical services, access to credentialed labor in a firm's export market, shapes the heights to which a firm can rise into higher value services. The GRC Indian certified radiologists and technologists that provide 3D services lack the credential recognized in the US healthcare market. While the firm has expanded in breadth of services, further upgrading in terms of specialization is constrained by a "credential ceiling." As a result, the company has exhausted its potential to move up into higher value professional services in the US market, unless it begins hiring US board certified radiologists like Teleradiology Solutions. Despite these limitations the GRC does have the potential to increase its volume in 3D services in the US, by hiring more Indian credentialed labor and finding additional US based customers. Teleradiology Solutions, in contrast, is less constrained in further upgrading into other high value radiology services, since it has the credentialed labor recognized in the US.

The lack of a US recognized credential makes the GRC more dependent upon client learning and these services are more tightly integrated with client systems and work processes than Teleradiology Solutions. The 3D images produced at the GRC are used to help radiologists in the US (or elsewhere) make a better interpretation of an image and to help them plan appropriate treatment. This means that 3D images are tightly integrated into the interpretation of the image itself. To make interpretation easier for the client's radiologists, the company is expected to conform its services to fit the clients' expectation in form and content. The scans performed by an American board certified radiologists, like those employed by Teleradiology Solutions, do not require a secondary read by the client, which makes them less integrated with client processes and less dependent on their clients for knowledge relative to the GRC.

These findings on firm mechanisms and their constraints have implications for state policy. If the state wants to build a high skilled service industry as quickly as possible, this study suggests, the state should focus its effort on enticing technically skilled workers to set up business operations in the country. Many developing states, including India, encourage "non-resident" citizens, to channel money back into the country, in the form of remittances and enticements to buy property. The state, however, should also expand upon efforts to help technically skilled labor relocate and establish business in the country. Some countries, such as India, encourage "non-resident" citizens to establish businesses by relaxing ownership rules around foreign business ownership. Yet this study suggests more should be done to entice technical professionals, especially professionals who are trained and certified in professional fields based in lucrative developed markets, like US credentialed radiologists like those who founded and work

for Teleradiology Solutions. The relocation of these professionals and the creation of professional service firms not only contribute to industry upgrading, but can also contribute to innovations that shape economic and social development in the country more broadly.

Table 4.3: Number of Job Listings per Job Seeker

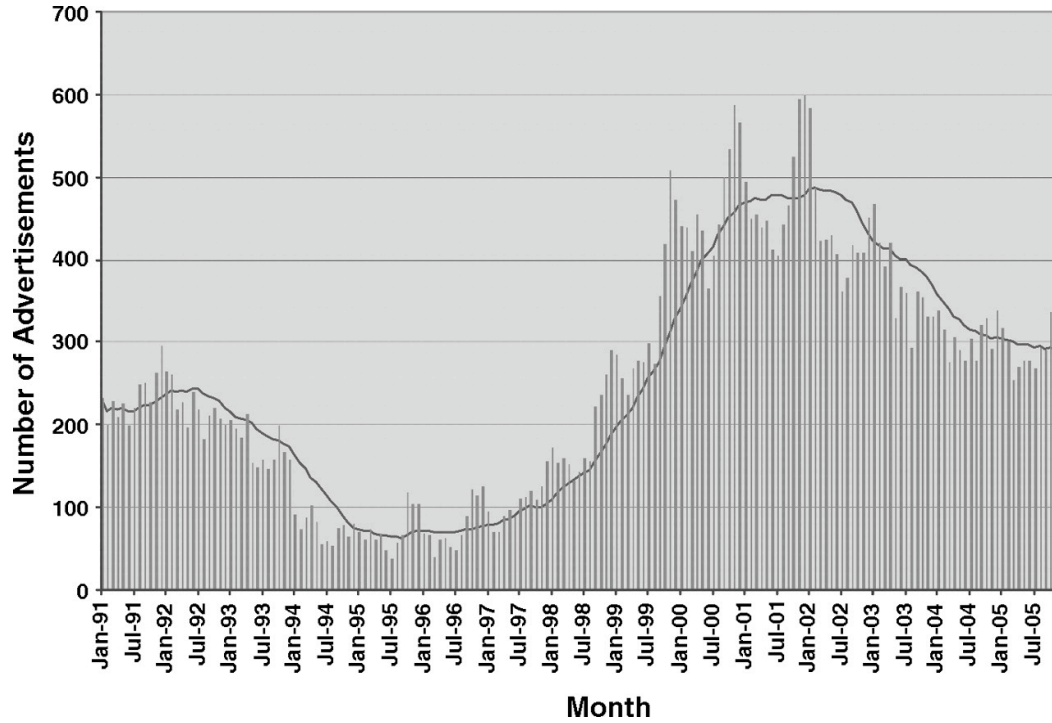


From American College of Radiology's Professional Bureau placement service during annual meeting of Radiological Society of North America during years 1990-2005. Gap in line indicates no data for 2001. Source: (Sunshine & Meghea, 2006)

Table 4.4: Advertisements for radiologist jobs

Graph shows actual number of advertisements (*vertical bars*) per month appearing in *American Journal of Roentgenology* and *Radiology* from January 1991-December 2005, with 12-month rolling average (*solid line*) calculated to reduce seasonal variation.

Source: (Sunshine & Meghea, 2006).



Chapter 5

Firm Training Programs: The Construction of Knowledge in Offshore Services

I. Introduction

The process of upgrading is traditionally understood in terms of the movement from lower to higher value work and the accompanying skill development necessary for such movement. However, my analysis of training programs at the firms analyzed in this dissertation suggests that we should understand upgrading not only in terms of concrete skill development but also in terms of the communication and presentation of firms' skills to their clients in developed countries.

My argument in this chapter examines both of these aspects of upgrading. First, I argue that training programs upgrade the technical skills of firm employees by providing them with increased exposure to "real world" problems and learning opportunities that are underemphasized in Indian higher education. Firm level training programs necessarily build upon the knowledge created in the higher education system described in Chapter 3. However, they also respond to specific and recognized *gaps* in the existing education system and labor market in India. In the previous chapter, I focused on processes of knowledge transfer between firms and clients. Such transfer is insufficient to address the knowledge needs of firms; they must also independently create knowledge, disseminate it internally to new employees, and upgrade workers' skills.

Second, I argue that investments in training are important to firms because they provide them with credibility, which may be as important as the actual skills firms possess. Such investments, both in the outspoken manner of the flashy campus described below and in more subtle forms of training, signify to clients that the firm has the ability to provide knowledge intensive services to firms in developed countries. For Indian firms who face questions about the capacities of developing countries to provide higher-level services the assurances that accompany visible training programs are of vital importance.

The chapter is organized as follows. First, I present three vignettes of firm initiatives that highlight the ways in which training programs perform both skill-building and image-management functions. These examples point to the intertwined nature of these tasks and the difficulties of distinguishing between these two functions even within single initiatives. I then discuss these two aspects of training programs in greater depth, treating the skill focus and image credibility boosting elements in turn. In discussing the skill-based features of training programs, I discuss the factors that make particular types of skill development necessary – the ways in which India’s knowledge labor force is insufficiently equipped both in terms of quality and quantity. I also provide an overview of the different approaches to training taken by different firms and across the two industries explored in this project. I then further examine the ways in which upgrading can be understood not only in terms of skills but also in terms of projection of an image designed to garner firms’ credibility.

II. Training Programs: Three Vignettes

i. Infosys Mysore Development Center

In 2006, a sprawling 337-acre university campus capable of training 14,000 people a year opened in India. Facilities on the campus include Internet enabled classrooms,

resident dormitories, libraries, a leadership institute, as well as a large spherically shaped 4 screen movie megaplex, sound studio, recreation room filled with games, an athletic center with workout equipment, a massive swimming pool, a rock climbing wall, tennis courts, cricket stadium, and seven restaurants, including one “floating” restaurant in the middle of a pond. One of the newest buildings is modeled on the Greek Parthenon in Athens, although the floor area is bigger. The government did not build this campus. Though education is often thought of as a state responsibility in India, this impressive campus was built not by the state, but by a single corporation, Infosys.

The “Infosys Mysore Development Center” is the largest corporate university in the world. It symbolizes a growing trend in the Indian IT and ITES industry wherein firms invest heavily in employee training and the creation of educational programs. The *spectacle* of the Center, however, signifies more than just an investment in skill development. In addition, it points to the importance of such training programs for firms’ image management. The extravagant appearance of the Center communicates something about the capacities and commitments of the firm.

ii. *The Knowledge Olympics*

Evalueserve has achieved a measure of success in creating firm knowledge through the creation of a company wide competition designed to foster innovation. The “Knowledge Olympics” is designed to help create a number of early stage research ideas that can be further developed into research papers or implemented within the company. In 2006-2007 the firm received 110 concept papers and many of those initial ideas were converted into industry research briefs (“white papers”) that are distributed to the industry and public via its website and public relations efforts, while others have been implemented within the company to increase firm efficiency (employee & executive,

2/14/09). The contest encourages participants to form competitive teams across functional, industry, and geographic areas within the company, which helps to span and broker internal networks and may help produce new knowledge and skills.

Some of knowledge created through this program have resulted in a deepening of firm skill and have been translated into new service offerings to clients. One idea that was first incubated in the Knowledge Olympics found a new way of predicting innovations of competitors (employee; Executive, Evalueserve, 2/14/09). The research approach was based upon the analysis of multiple databases that uncovered Google's various patent applications filed with the U.S. government and these results helped the participants predict Google's move into the phone market (Evalueserve, 2007). The research approach that predicted the unveiling of the Google phone can now be applied to new firms and industries in order to predict new innovations. In this way, the research knowledge and skills cultivated in this annual event can serve as testing ground for new approaches that can help differentiate Evalueserve in the market.

In addition to the skills and knowledge that are produced through the "Knowledge Olympics," it is significant that research produced internally are then presented to the outside world in the form of industry "white papers" via the firms website. Here, Evalueserve can demonstrate the innovative work, high-level skills, and productivity of its workforce.

iii. Rad Gurukul

Teleradiology Solutions has built a new educational facility with the express purpose of helping to address India and South Asia's shortage of skilled labor in radiology (See Table 5.1: India & US Radiologists to Population Ratio). In India, there are 10 times fewer radiologists relative to the population in the U.S. (Arjun Kalyanpur,

2008). The radiology training center, called *Rad Gurukul*, which in Hindi means residential training facility run by a tutor, is the first center of its kind in India dedicated to radiology and related IT training (Wrong, 2008). The training center is co-located at the firm's 5-story office building in Bangalore and contains a university style auditorium, complete with sloping stadium seating that can accommodate 100 people, LCD projectors, video conferencing equipment, and the capability to host international speakers, and broadcasting its lectures for later viewing by the radiology profession.

What makes *Rad Gurukul* unique, however, is that it is designed to serve a broader audience than just the firm; indeed, it serves to educate individuals from not only India, but also the surrounding region. Classes on cardiac imaging and emergency radiology have drawn heavy interest. A two-day teleradiology symposium drew students from Singapore and parts of the Middle East (Wrong, 2008). The founder of the program said he will pursue a recognition program with universities to help serve this broader educational role (Wrong, 2008). *Rad Gurukul* increases skills and capabilities of new radiologists, while also helping to disseminate industry knowledge that may help radiologists, despite their country of certification, upgrade their skills.

This farther-reaching educational function has developmental implications for the region, but it also plays a role in cultivating the image of the firm and the industry: the specter of an Indian firm training radiology students and radiologists who travel from outside the country to gain expertise sends a distinctive message about the specialized knowledge and capabilities that characterize not only the firm, but also the Indian radiology industry more broadly. The message is striking: India is a producer of knowledge in this arena.

Table 5.1: India & US Radiologists to Population Ratio

	Radiologist to Population Ratio
India	1 : 100,000
US	1 : 10,000

Data Source: (Arjun Kalyanpur, 2008)

III. Training Programs as Skills Building

In order to understand the approaches firms take to training employees, it is necessary to examine the needs it seeks to meet within its own workforce and the labor pool in India more broadly. Interviews and data suggest that firm training programs attempt to address what are perceived to be the inadequacies of Indian labor with regard to both quality and quantity.

i. Insufficient labor quality and quantity

As discussed in Chapter 2 and 3, India needs reform in higher education to increase both the quality and quantity of graduates. This is particularly true in the IT and ITES services industries where double digit growth rates have led to a reduction of skilled workers, particularly at the high skill end of the spectrum. In response to a tightening labor market and rising wages, Indian software firms sought to upgrade the skills employees, rather than hiring a succession of under qualified programmers (Athreya, 2005, p. 32). Investments in industry wide training has intensified as the offshoring service industry in India has grown. According to one study, IT firms provide newly hired employees around 60 to 90 days of training, while low-skilled business process outsourcing and call centers offer around 15-40 days of training (Wadhwa, de Vitton, & Gereffi, 2008).

Within financial services intensive training is often required within the firm itself because the educational system does not produce graduates with practical or industry

specific knowledge. According to managers at Evalueserve, there are shortages of skilled people in the country (personal interview, Executive, 2/12/08; personal interview, VP, 2/14/08). At Infosys a manager reported that the industry is facing a “talent crunch” where chartered accountants, MBAs, and postgraduates who tend to have the skills to do this work are hard to find (Infosys, Manager, 11/23/07). Indian firms are increasingly responding to this skill shortage by investing heavily in training in order to bring the skills of graduates up to levels required by industry. According to one executive, “we have no choice” because at many universities, the “curriculum does not turn out candidates with skills we need” (Menon & Mishra, 2009). The skill shortages reported most frequently by industry managers are technical skills, such as financial analysis and accounting skills. According to another Infosys executive, “If our universities upgraded and made the teaching methods more industry and employment-oriented, the IT sector need not spend that much for training” (Special Correspondent, 2008). This lack of skill and knowledge in financial services makes it difficult for firms to offer services that require those skills. Based on these conditions firms in this position invest heavily in training to close the skill requirement gap.

Firms providing teleradiology services face even bigger obstacles in terms of finding qualified workers than those facing financial service firms. International teleradiology firms that provide image interpretations must possess medical credentials recognized in the state where those services are provided. As noted in the previous chapter, finding this credentialed labor source has been difficult to secure at times in the United States (Sunshine & Meghea, 2006) and it is particularly difficult to secure outside the country, where far fewer professionals reside. This entry barrier for teleradiology

firms may decrease the incentive for firms to offer additional training in teleradiology. Some firms exporting teleradiology services, however, offer intensive training for new employees who already possess the required credentials. This training is largely aimed at keeping abreast of new knowledge in the field and reducing potential errors and inconsistencies in service delivery, which could potentially cost not only a business relationship, but also a life. Firms like GRC, which provide lower value 3D imagery teleradiology services, are not constrained by the same credential requirements. However, paradoxically, the GRC's practice of relying upon Indian radiologists, who are a much more highly educated labor force than that used in the US to perform similar tasks, means that additional job training is required to teach these employees how to do lower value work that their educational and previous work experience tended not to provide.

ii. Differences between Industries

There are two broad differences in the skill and knowledge requirements that are based on the capability for breadth and specialization within each industry. These in turn shape the training requirements of firms. First, deeper knowledge is required in medical services relative to financial services. Employees in medical services gain most of their technical expertise through educational and residency training and this takes years of additional training. Educational training to get a business or accountancy education and professional credential is much more generalist, than a highly specialized medical degree. Firm level training programs reproduce these differences in training specialization. Initial firm level training in radiology at the GRC and Teleradiology Solutions are three to six months in duration, while they are around one month long for financial services at Infosys and Evalueserve.

A second difference is that financial services are applicable to multiple industries, while medical services are not. This means that in financial services training is developed to orient workers toward a specific industry specialization. ITES firms, particularly at the high-skill end of their service provision, require in-depth industry knowledge to be able to provide services of value to customers. Financial services can be sold to clients in multiple industries, but the firm needs its employees to have a depth of industry knowledge for each industry it provides services within and training programs at both Evalueserve and Infosys help (new) employees learn industry specific dynamics prior to on-the-job learning. Medical services, on the other hand are focused within the medical professional itself. As result, industry training, when offered, tends to focus on technical developments and trends within the field. Most medical training offered focus on technical skill developments, rather than industry knowledge.

iii. Building Skills in the Financial Services Industry

Infosys shares some similarities with Evalueserve in its approach to training. Both organizations have a month long new hire training program that emphasizes technical skills (financials), industry specific training, and soft skills training. The training program at Infosys focuses on learning client processes and is characterized by a relatively top-down educational structure, focused on “real world” application. Evalueserve, on the other hand, tries to promote knowledge sharing and knowledge creation within the firm through internal programs that foster innovations and “white papers” produced by executives and client projects. (See Table 5.2: Comparison of knowledge creation approaches in financial services.)

Table 5.2: Comparison of Knowledge Creation Approaches in Financial Services

Infosys, Knowledge Services	Evalueserve
<p><i>Core services:</i> Financial planning & analysis</p> <p><i>Skill requirements:</i> Analytical skills and in-depth financial literacy</p> <p><i>Employee profile:</i> 1000 highly skilled workers; MBAs, chartered accountants, engineers, statisticians & economics graduates</p> <p><i>Training Model:</i> “Right skilling”: Hire “under” qualified employees that require additional training</p> <p>New Hire:</p> <ul style="list-style-type: none"> • 1 month: technical and industry background training <p>Continuous education:</p> <ul style="list-style-type: none"> • Online training tutorials • Client specific training 	<p><i>Core service:</i> Business & Investment reporting</p> <p><i>Skill requirements:</i> Analytical & research skills, in-depth financial literacy</p> <p><i>Employee profile:</i> 1700 research analysts; engineers, MBA’s, intellectual property lawyers, PhDs, chartered accountants, statisticians</p> <p><i>Training Model:</i> Hire best employees in technical areas and provide additional training</p> <p>New Hire:</p> <ul style="list-style-type: none"> • 1-month: functional training (i.e. finance fundamentals, excel modeling, etc) and industry specific training (i.e. oil & gas, financial service industry) <p>Continuous education:</p> <ul style="list-style-type: none"> • Monthly knowledge sharing sessions • Online training tutorials

Financial services include a number of services from more transaction and rule-based services, such as order processing, accounting, indirect procurement, payment processing, fixed assets, general ledger accounting, and reconciliation, to higher value services that require more interpretation and judgment, such as financial analysis, financial management, and financial reporting. In moving from the former to the latter, Infosys has shifted emphasis away from more general financial skills, proficiency with Excel, and other bookkeeping software programs that permit in-depth reporting and analysis toward the development of more interpretive skills and in-depth knowledge of a specific industry segment or of the particularities of a specific client.

Over time, training at Infosys has moved from a theory-focused program toward a more problem-solving oriented approach. A case study approach helps employees understand how to approach specific problems in an effective manner (Executive, Infosys, 12/10/08). This makes training more applicable to the business needs of customers and compensates for the problems identified in the education system, which, as noted above, tends to focus on rote memorization of concepts rather than application or practical problem solving skills.

Infosys's employee training capabilities are tightly integrated into its hiring practices, which it calls "right skilling." Through this process the company defines the four or five key skills required for a given process and then hires people who demonstrate a basic background in those skills, yet still require further training in order to become competent (Director, 4/23/09). This strategy was adopted because lower skilled employees are easier to find in the labor market and less expensive to hire. However, the "right skilling" hiring and training strategy is also a retention strategy, which reduces the chance "over" qualified employees will lose interest in the work and leave (Director, 4/23/09). The concern over employees becoming bored with the work suggests that even within knowledge services work may be narrow in scope and potentially repetitive. What is particularly noteworthy is that a "right skilling" training and hiring approach would be impossible to pursue in high-end medical services due to the higher degree of specialization, the way skills have been defined by the profession, and the credential requirements. A technologist cannot be transformed into a radiologist with additional firm level training, although the reverse is possible, as the GRC case demonstrates.

At Evalueserve, the training of employees occurs in one of three ways. The first type of training is a one-week orientation program for new hires where they learn a general overview of the company. The second type of training seeks to get newly hired graduates to learn the fundamentals about the specific industry domain they will be working in. After employees are hired according to specific educational backgrounds that the firm seeks (i.e. MBA, Chartered Accountant, etc) are put into a training process, which familiarizes themselves with the specifics of their future projects. Each employee goes through a three-week training program composed of classroom trainings and exercises where their performance is assessed (personal interview, Asst VP, 2/13/08). Industry “vertical training” also helps workers learn trends in specific industries such as pharmaceutical, oil and gas, financial services, Fast Moving Consumer Goods and knowledge of the industry (personal interview, Executive, 2/12/08).

The third type of training, which most distinguishes Evalueserve’s approach from Infosys’s approach, occurs through internal knowledge sharing sessions and through online training modules. Knowledge sharing sessions are hosted once a month where teams discuss different types of projects or share insights about new things they have done (personal interview, Asst. VP 2/14/08). These knowledge sharing sessions are oriented toward sharing of tacit knowledge of tasks that are difficult to share through “E-learning modules,” which communicate more explicit forms of knowledge.

One way of arriving at a better understanding of Indian ITES firms’ training programs is to compare them to the training US workers typically receive. Indian companies do share many similar approaches to those employed by Western companies, but they appear to be investing more heavily in terms of dollars and portion of overall

employee time spent in training relative to the US workers. Indian companies are able to invest more heavily in relative dollars because it is less expensive to run training. At Infosys the \$6000 investment in employee training would cost \$50,000 for an equivalent amount of training in the US. The training in India costs about an eighth of US cost, which makes it more affordable. The fact that Indian workers in IT and ITES tend to work longer hours than average working hours of both US and European labor forces also enables firms to dedicate a larger percentage of employee's time toward training, without significantly impacting overall worker productivity. Evalueserve employees spend 8 to 9 percent of their time working on continuous training.

A recent study found that US workers spent an average of 35.06 hours in formal training and organizations in the top tier of employee hours devoted to training averaged 44.34 hours in 2006 (Paradise, 2007). According to data from the Organization for Economic Co-operation and Development (2009), Americans worked an average of 1,768 hours a year in 2009. Using the US average hours as a basis, American workers are spending an average of 2 percent of their time in training, while workers at training intensive firms spend 2.5 percent of their time in training.

Therefore, Evalueserve employees are spending over 3 times as much time in formal training as American workers. A recent study of the IT and ITES industry suggest Indian workers tend to work longer hours, often 9 to 12 hour days, including Saturdays, which is more than the US counter parts at client organizations based in the United States (Nadeem, 2011). The higher total hours of work suggests that Evalueserve employees are spending more hours in training than Americans even if the percentage of training to overall hours was held constant.

iv. *Building Skills in the Medical Services Industry*

The training approaches for GRC and Teleradiology solutions share some similarities, however they diverge sharply in terms of continuing education. The reasons for these different approaches to training are due to the different niches that these firms occupy. Paradoxically it is higher value Teleradiology Solutions that invests heavily in long-term training, while the GRC does not. Professional access and credentials shape firm incentives to train employees and the ability for employee and firms to upgrade subsequently. Both firms have new hire training that is up to six months in duration, but the training serves different functions at each firm. At the Teleradiology Solutions, training enhances the technical training that radiologists underwent through medical training and residency. At the GRC on the other hand, the training is crucial for reorienting the Indian radiologists toward 3D image manipulation, which they have not been trained in.

Table 5.3: Comparison of Knowledge Creation Approaches in Medical Services

Global Radiology Center	Teleradiology Solutions
<p><i>Core service:</i> Manipulation of MRI or CT scan from 2D to 3D image</p> <p><i>Skill requirements:</i> Manipulation of technology to produce clinically relevant images</p> <p><i>Skilled Employee profile:</i> 4 Indian certified radiologists & 4 technologists</p> <p><i>Training Model:</i> Hire “over” qualified employees that require low levels of long-term training. One-on-one mentorship, few formal resources.</p> <p>New Hire:</p> <ul style="list-style-type: none"> • 3 months for radiologists, 6 months for technologists <p>Continuous education: Unstructured</p> <ul style="list-style-type: none"> • Technical learning opportunities at parent hospital 	<p><i>Core service:</i> Radiology reporting</p> <p><i>Skill requirements:</i> Interpretive ability to assess abnormalities in imaging technology</p> <p><i>Skilled Employee profile:</i> 13 US ABR Radiologists + Indian certified radiologists</p> <p><i>Training Model:</i> Hire certified radiologists and provide “academics”</p> <p>New Hire:</p> <ul style="list-style-type: none"> • 6 months before unsupervised interpretation. <p>Continuous education: “Academics”</p> <ul style="list-style-type: none"> • “Journal club” • Internal professional presentations • Weekly review of difficult/problem cases <p><i>Rad Gurukul</i> – founding of a regional radiology training institution</p>

The GRC’s hiring and training approach is diametrically opposed to the strategy adopted by Infosys. Rather than hiring “under” qualified candidates that require further training, the GRC hires “over” qualified Indian radiologists. At the GRC Indian certified doctors perform nearly half of the 3D enhancements coming into the center and review all 3D work going abroad. The GRC also employs technologists who have equivalent qualifications to US based technologists, but all of their work is reviewed by an Indian board certified doctor before being sent to US based clients. The much lower costs of Indian doctors enable the GRC to employ highly educated labor, relative to

technologists used exclusively in the U.S. The lower costs also enable an additional set of eyes to check the quality of 3D imagery.

Continuing education approaches differ dramatically. After completing the initial training process at the GRC, employees may gain additional clinical exposure under the senior radiologist at the adjacent parent hospital. However, these continuing education opportunities appear to be the exception, rather than the rule. The continuing training opportunities are not required, are unstructured, and the onus is on the employees themselves if they want to further upgrade their skills. Rather, the emphasis on training over time at the GRC tends to be client-centric, where employees slowly learn new client processes over time (See chapter 5 on mechanisms for knowledge transfer).

At Teleradiology Solutions on the other hand, continued training, commonly referred to as “academics,” is compulsory and occurs on a weekly basis. The firm’s co-founder tries to replicate the academic environment he was trained in, while also disseminating the knowledge he and other radiologists have gained through their varied experiences and training. “Academics” at Telereadiology Solutions include presentations by rotating radiologists on new developments in the field every Wednesday evening, “brown bag” lunch review sessions of difficult or novel cases 3 times a week, and occasional industry symposiums (personal interviews, Director of Quality, 1/31/08; Founder, 1/22/08). These activities keep radiologists attuned to recent developments in technology and methodologies in the field and ensure that knowledge within the firm is constantly circulated. The Director of Quality at the firm credits “academics” with drastically improving the service quality of the firm over time (interview, 1/31/08).

The major explanation for the divergence in the GRC's approach to continuous training and Teleradiology Solutions's are the lack of overall upgrading opportunities that are presented to the firm. The GRC has few opportunities to move up, which makes additional training more of a benefit to employees than a strategic imperative. At Teleradiology Solutions, in contrast, they have continued opportunities to expand into high value services and continued training is a key component of firm strategy.

The GRC invests less heavily in long-term training relative to Teleradiology Solutions, for two reasons. First, the GRC already employs higher skilled and more highly educated labor than employees performing these services in the US, which means that additional technical training will have diminishing returns both in terms of technical ability and credibility. Second, the company does not have an added incentive to teach the employees new skills if workers are already proficient in the services they provide to their customers and there are limited opportunities to move into more specialized tasks. This reflects the more commoditized nature of the service the GRC provides relative to Teleradiology Solutions.

IV. Training Programs as Image Management

The foregoing section described the many different tools and approaches firms use to build the skills of their employees. While techniques vary between firms and between industries, overall the goal is to be able to deliver high-level, knowledge intensive services to offshore clients. In order to achieve this goal, however, firms also engage in "image management." While they do this in a variety of ways, some of which are described elsewhere in the dissertation, the training programs themselves serve such a

function. Firms attempt to build their credibility by making *visible* to clients the training they provide; thus, the setting, structure, and products of various training programs are manipulated to send a message of expertise and capacity to clients.

The first of the vignettes in the second section of this chapter presents a particularly stark example of impression management. Why does the Infosys campus appear to be so over-the-top, almost ostentatiously displaying its features to the world? The Infosys Mysore Development Center not only trains the firm's employees, but it is also part of the management's strategy to project its knowledge and skills capabilities to both current and potential customers and its own employees through its education and training efforts.

Touring the corporate university campus makes one feel as if they are simultaneously on a university campus, at Disneyland, and at Club Med. It leaves one with the perception that if the company can create a place such as this, just imagine what can they achieve in business. The founder of Infosys, Narayana Murthy, justifies the expenses on training, which is over \$175 million a year (Interview, 12/10/08), and on the lavish accommodations of the Mysore training facility specifically by referencing the perceptions it has on clients:

We saw a world-class training facility that could impress our clientele as a necessity of the times. Many of our clients stay at the Mysore campus when they visit us and it is important that they take away a positive view of the company (Menon & Mishra, 2009).

Here the training facilities at Infosys are clearly doing more than just building the capability of its workforce, but also communicating the firm's capabilities to prospective and existing clients. The company also has full time staff members dedicated to showcasing the campus to visiting guests, some of whom drive visitors around in a golf

carts to allow them to experience the facilities, see the sights, such as the seven sex-segregated dormitories that spells out the word “I-N-F-O-S-Y-S.” The campus is clearly engaging in impression management, using the educational facility to build the Infosys name brand, by displaying its approach to employee training and education. Yet Infosys also communicates its skill capacities through media to manage to prospective clients that have not yet visited the Mysore campus. *Fortune* magazine’s 2006 story “Harder than Harvard” details the selectivity and rigor of the Infosys’s training facility in Mysore (Schlosser, 2006).⁸⁸ In this case, the impression management extends beyond the boundaries of the campus, to target the company’s target customers, business professionals in the US.

Infosys’ approach to training also communicates a broader message about firm capabilities and the firm’s philosophy behind training, part of a larger firm narrative that portrays private industry intervening in education to compensate for the government’s shortcomings. Adding to this perception, President Sonia Gandhi, whose political party leads the current government, inaugurated the 1.44 million square foot mega training structure on the Infosys campus (Menon & Mishra, 2009), further demonstrating the ties the firm has to political elites, the influence they command over politics, and the media attention they get through their training efforts.

At Evalueserve, white papers demonstrate the innovative work, high-level skills, and productivity of its workforce. The team-level knowledge sharing sessions and cross-functional team interaction through initiatives, such as the “Knowledge Olympics,” help create firm innovations that are captured in the “white papers” the company produces.

⁸⁸ 5% of newly hired employees don’t pass the final exams at the Mysore training facility and do not continue their employment with Infosys (Head of Mysore Learning Centre, 12/15/08).

The key purposes of these industry “white papers” is to establish its authority as a source of knowledge and to build firm credibility in “knowledge processes outsourcing.” This research is distributed through its website and through its Public Relations department to establish itself as a source of expertise, but also to cement its claim that it has knowledge and skills in the first place.

Teleradiology Solutions helps to build its clinical credibility through its training program, that it calls “academics,” and through the construction of its regional radiology-training center, *Rad Gurukul*. In particular, the website for the Rad Gurukul helps promote the “academic” image Teleradiology Solutions seeks to promote. It does this by providing access to many of the firm’s continued training programs including tutorials, archived pictures and analysis of difficult review cases, summaries of journal articles covered by the “journal club,” and notices of academic presentations hosted at the center. The public displays of these activities, on the *Rad Gurukul* website (RadGuru.net), linked from Teleradiology Solutions and independent industry media coverage, help signal the knowledge capabilities of the firm to clients and potential employees.

The GRC, differs from the other three cases in that it signals its credibility primarily through the hiring of “over” qualified personnel, rather than its approach to long-term training. After initial new hire training, training become less important for the GRC relative to the other cases because the credibility of the labor is established, through the much higher education and professional training, relative to US based technologists. The GRC’s manager, commenting on the role the educational profile of the center’s workers play in building firm credibility, said “It is a bunch of doctors, but you will be *selling their credibility* [emphasis added] (Manager, GRC, 10/17/07). From this quote, it

is clear that the doctor's credibility was the primary point of differentiation to the GRC's customers. The GRC has the labor to provide a high level of service quality to its customers and with few, higher value opportunities, there are limited incentives to further develop their long-term education program, since their credibility and quality of their processes are already high. The GRC's approach stand in contrast to Teleradiology Solutions, which needs to consistently reassure prospective customers that the firm has the expertise to provide high quality services from India. Teleradiology's Solution's *Rad Gurukul* training center and website are crucial in signaling this technical capability.

V. Conclusion

This chapter has focused on firm level practices in training and knowledge creation as well as the importance of signaling the possession of those skills to overseas clients. Training programs upgrade the technical skills of firm employees by providing them with increased exposure to "real world" problems and learning opportunities that are underemphasized in Indian higher education. Firms also independently create knowledge, disseminate it internally to new employees, and upgrade workers' skills. I also argue that firm training and knowledge creation efforts are simultaneously important in upgrading firm skills and in producing credibility in those skills. The perception of skills is particularly important in services, which are harder to measure and define relative to manufactured commodities, and where those perceptions determine service quality. The investments in training programs that result in skill upgrading are not just an end, but also the means by which firms project that capability. Firm efforts in skill upgrading also build the companies credibility in providing knowledge intensive services.

All firms in this dissertation demonstrate their technical capabilities through investments in training. Three firms in particular – Infosys, Evalueserve, and Teleradiology Solutions – projected the learning that occurred through training and their efforts at knowledge creation to increase skill credibility. The training strategy for each firm grew out of the skill deficiencies in the labor market and produced by the educational system, however, firms responded differently even within the same industry. Teleradiology Solutions and Evalueserve both provided more continuous training and knowledge sharing opportunities that disseminated knowledge within the firm through formal and informal channels. Teleradiology Solutions used interactive journal clubs and an internal rotational radiology speaker series to achieve this goal, while Evalueserve used knowledge sharing sessions within divisions and formal initiatives, such as the “Knowledge Olympics” to circulate and combine knowledge in new and innovative ways. For Infosys and the GRC the training was deeply integrated into the hiring practices, but diverged in opposite directions. Infosys, through its “right skilling” approach, hired under qualified employees that required additional training, while the GRC, due to concerns over the credibility of Indian medical professionals in the US, hired over qualified labor that required low levels of continuous training, especially since opportunities in higher value services were limited. Finally, firms also signaled their skill and knowledge capabilities through various means. Infosys communicates its technical capability through its expansive and lavish training infrastructure, Evalueserve through its “white papers,” distributed to clients and news sources, and Teleradiology Solutions through its “academics” and the formation of its radiology training center, *Rad Gurukul*. In the chapter that follows I will take a closer look at how firm level training, along with

client interaction, teach service employees to provide services in a manner that is credible to overseas clients, drawing upon skills that were first developed under colonialism

Chapter 6

Cultural Labor & Industrial Upgrading

I. Introduction

In 2004, in the midst of an intensification of offshore outsourcing of services from Western firms to developing countries, U.S. based Dell Computers reversed its practice of routing customer service calls to India-based call centers. During 2008 and 2009, AT&T, Citibank, Delta Air, and United Airlines also relocated call center operations from India back to North America. In all five of these high profile cases American consumers were dissatisfied with the customer service provided by Indian workers (Castro, 2003; Prada & Sheth, 2009; Thibodeau, 2005). However, what constitutes “good” customer service is rooted in cultural norms that vary geographically. These company experiences demonstrate that declining customer satisfaction with services moved offshore can erode offshore labor cost savings and threaten future earning. It also suggests that industry development requires cultural skills, not just technical and managerial skills.

While Dell, AT&T, Citibank, Delta Air, and United Airlines’ experiences were high profile, and outsourcing is often associated with low-level services like those performed in call centers, related issues in knowledge intensive work blur this distinction. In this chapter, I argue that successful industrial upgrading in service exports relies upon the learning of specific interactional skills, attitudes, and approaches to work that are specific to the culture of one’s customers. I refer to the management of these skills as

“cultural labor,” a category that is analytically distinct from more generalized technical and interactional “soft” skills.⁸⁹ Cultural labor requires the learning, adoption, and deployment of specific cultural repertoires that meet the cultural expectations of customers. In order to be successful in service exports, firms based in developing countries must assimilate workers toward an American or European business culture in order to provide services in ways that are consistent and understandable to Western clients’ own cultural standpoint. This insight helps extend Amsden’s concept of knowledge-based assets, adding a firm level cultural capabilities alongside the technical and managerial skill requirements for industrial upgrading.

This chapter is organized into seven sections. In the following section of the chapter I situate the particular skill requirements service exports into three bodies of literature that theorize skills: post-colonial theory, sociology of work, and cultural sociology. Next I explain that the global shift toward service work, India’s leadership in this sector, and introduce the Indian firm cases analyzed in this chapter. Third, I elaborate the theory of cultural labor, exploring how the theory helps us to make sense of the links among culture, skills, and action in cross-cultural interaction. I then turn to an analysis of the cultural challenges firms face in intercultural business transactions and the mechanisms they have turned to in order to surmount these challenges. Next, I analyze firm level mechanisms used to *produce* cultural laborers through firm training programs. In the penultimate section, I identify how these teachings and the constraints of the work process itself may ultimately hinder cultural labor and deployment of the very cultural repertoires taught in firm trainings. I conclude by highlighting how cultural labor may

⁸⁹ The term “cultural labor” used here should not be confused with labor in creative industries, such as art and media.

become a more generalized skill in the Indian industry context and to other countries seeking to enter the service export market.

II. Industry Development, Skills, and Culture

Three schools of thought shed light on the question of what specific skills are required for industrial upgrading in high value global services. First, post-colonial theory highlights that the construction of skills occurs within broader relations of power. The colonial system perpetuated binary conceptions between the Orient and Occident, noting that these relations were “constitutive;” one could not occur without the other (Said, 1979). Within these relations, skills too, were also constructed particularly through the practice of education, which reproduced and perpetuated inequality and differences between the Colonized and Colonizers. According to Homi Bhabha, the colonial project was never to liberate natives, but rather to reproduce the colonized as “almost the same but not quite/white” (Bhabha, 1994). During the colonial period the British wanted to teach Indian subjects to behave like a British citizen, but the Indian would never actually be British. In a similar fashion, the ITES industry is characterized by skill upgrading that rests in part upon training that produces modern day “mimic men”; workers who emulate western business practices that approximate those performed by their western clients. Firm training programs, and increasingly the post-colonial educational system as it is reformed to integrate soft skills and cultural sensitivity training, are playing a role similar to those of colonial schools that produced the colonial subject. However, it is the workers and managers in businesses located abroad, rather than the colonial state that identify the cultural deficiencies of Indian workers. A consistent “problem” identified with Indian

workers, according to western clients and increasingly Indian managers, is a “culture of deference” (Nadeem, 2011), or an inability to assertively resist unrealistic client demands. This is one example of how essentializing characterizations persist in contemporary global work spanning east and west. While Indian workers are often seen as overly “deferential,” deference points to structures of power that are not unique to India. For example, retail sales work within China found deference to be a common behavior toward customers (Hanser, 2008).

The literature on the sociology of work articulates the non-technical interactive skills and emotional management required for service work (Hochschild, 1983; Wharton, 2009). Work in this tradition recognizes that the manipulation of emotions is required in a wide variety of “interactive service work” (Leidner, 1993). Arlie Hochschild, in theorizing her influential emotional labor concept, recognized that culture influences emotional displays in service work and that some groups may regulate their emotions more than others (Hochschild, 1983, p. 57). However, culture may not simply impinge upon emotional expressions as Hochschild claims, but they can also be manipulated and managed in work, just as emotions are. Cultural behavior, scripts, and tropes are culturally specific and vary across geography and time, yet they can also be learned and deployed strategically within the context of differing work environments.

Scholars working within the sociology of work also highlight, often critically, the role “soft skills” play in hiring preferences, management, and job competence in service work (Moss & Tilly, 1996).⁹⁰ The definition of soft skills varies, but one study defines them as the “skills, abilities, and traits that pertain to personality, attitude, and behavior rather than to formal or technical knowledge” (Moss & Tilly, 2001, p. 44). This

⁹⁰ For a critical overview of the soft skill concept see (Lloyd & Payne, 2009).

conception, however, conceives of soft skills as a broad residual category that contains diverse behaviors such as general business skills and etiquette, communication skills, embodying a certain approach to work, and understanding the norms associated with clients' culture. I argue that "cultural skills" are analytically distinct from soft skills, as well as emotional labor described above, even if in practice the three may be deeply intertwined and difficult to separate in practice.⁹¹ When used in the analysis of cross cultural labor, the broad category of soft skills does not adequately take up the relations of power, learning processes, and tensions between cultural norms that are specific to this context. Although the role of soft skills in low-wage services has been highlighted by scholars focused on work (Grugulis & Vincent, 2009; Moss & Tilly, 1996; Pager, Bonikowski, & Western, 2009), few studies focus on these skills in an international context (Otis, 2008) or analyze these soft skills in high skilled services. This lack of scholarly attention to the role of soft skills in international contexts means that definitions of soft skills fail to theorize the unique cultural interpersonal skills that are central to the international trade of service work.

Third, a body of theory focuses on how culture shapes skills as individuals respond to their external environment (Bourdieu, 1977; Swidler, 1986). Bourdieu's concept of *habitus* provides insight into culturally-based skills by explaining how individuals within a given culture share an understanding of the tacit "rules of the game" (Bourdieu & Wacquant, 1992). Swidler, critiquing the habitus concept, argues that the concept implies that skills are more or less unitary to a given culture (Swidler, 2008). If this critique is valid, then applying the habitus concept in an intercultural work

⁹¹ Asaf Darr analyzes technical sales work and finds that technical and social skills are intertwined and interdependent (Darr, 2006), thereby blurring the boundary between technical and social skills.

environment suggests that workers must learn a new habitus to augment or supplant an existing one. However, the actual culturally based skills learned or adopted may be narrow in scope and deployed strategically in specific work contexts, rather than deeply rooted in one's cultural identity, guiding action in multiple arenas, or diffused throughout society. Yet, the more unitary nature of a habitus is less of a problem than Swidler's critique may suggest for two reasons. First, the habitus is not necessarily coherent and unified, but may contain varying degrees of integration and tension (Wacquant, 2004). Second, the habitus is always oriented toward a particular field (Bourdieu, 2000). This means that the habitus may be internally varied even while oriented toward a specific field of international business services.

Swidler's "tool kit" model of culture offers a complementary perspective for an analysis of intercultural work environments. On her account, culture is a resource, or a repertoire of skills that directs individuals' action (Swidler, 1986, 2001). Skills provide the major link between culture and action and are composed of "habits, practices, and other 'cultured capacities,' such as intuitive capacities for perception and judgment, that have to be learned and that people can't perform with confidence unless they get reasonably good at them" (Swidler, 2008, p. 616). For Swidler, individuals draw upon conflicting cultural motifs to guide their action. Yet individuals operating within an environment with highly differentiated cultural motifs face compounded challenges, especially when that interaction is expected to produce collaborative work. Swidler's theory does not explicitly address the challenges that arise when multiple cultures are involved in guiding individual action. Cross-cultural collaborative work is guided by differing cultural skills and interpreted through different cultural logics and schemas.

This may introduce novel variation into the work process leading to innovation, but it simultaneously increases the chances of cultural misunderstanding between workers of differing cultures, which may lead to a breakdown in collaborative work processes. These cultural misunderstandings, aggregated to the firm level, threaten the confidence in firm capabilities and stymie opportunities for industrial upgrading. The “cultural labor” concept presented below will synthesize the “tool kit” model of culture with the habitus, by differentiating specific behaviors along a cultural repertoire continuum ranging from surface to deep acting.⁹²

III. Theorizing Cultural Labor

i. Variations in Skills: Call Center Workers and Knowledge Workers

A variety of offshore service workers ranging from call center agents to knowledge intensive service professionals are expected to embody a Western approach to work. Call center workers servicing western clients are required to learn a number of distinct cultural skills, scripts, and behaviors in order to mimic the communication style and cultural expectations of their customers and mask their national identity from overseas customers. The specific behaviors include “accent neutralization”; adopting an anglicized name (i.e. Suresh becomes Stephen); ability to engage in local small talk (such as the local weather, news, sport teams, etc); and evading questions about the call centers true location or the employee’s citizenship (Nadeem, 2009; Poster, 2007). Yet, the depth at which cultural skills are enacted and embodied depend upon the labor process.

In general, lower value interactive service work requires more surface acting than higher value service work, due to a more tightly regulated labor process. Hochschild

⁹² For an explanation of deep and surface acting see (Goffman, 1973; Hochschild, 1983).

(1983) argues that the speed up of flight attendant work cause workers to engage in more surface acting, using their smiles, rather than deeper, more genuine forms of emotional display. Similarly call center work requires similar surface acting, since the work is characterized by high call volumes, brief and scripted interaction with customers (Taylor & Bain, 2005). Outbound call center workers may be told to “smile-and-dial” and “customers can ‘hear’ your smile on the other end of the line.”⁹³ Workers are told to act upbeat and cheerful, regardless of their own true feelings. However, in cross cultural call center work, workers must not only manage their emotional displays, but also their cultural expressions.

Yet, high value, offshore services, such as IT and knowledge intensive professional services, also require cultural skills. Higher value cross-cultural service work presents an interesting contrast, since it is characterized by higher levels of autonomy and interpretation, which is more difficult to script, relative to call center work. In this context skill requirements emphasize deeper acting, communicating in a Western style that facilitates long-term collaborative work and approximates a client’s own approach to work. Offshore professional services require interpretive skills that are more difficult to standardize; target business clients, rather than general consumers; and involve interaction that is longer in duration, iterative, and with the same group of individuals. The nature of this interaction means that it is not feasible for offshore knowledge intensive service workers to pretend that they are domestic workers, as call center workers do. The requirement of cultural skills persists even in highly technical services characterized by comparatively low levels of interaction, such as international

⁹³ I heard these phrases repeated by managers in sales and call center environments in multiple US companies between 2000-03.

teleradiology. Training in knowledge intensive professional services emphasizes the clarity of written and verbal communication with clients and embodying the attitudes possessed by business clients in the West.

ii. A Colonial Legacy

The ability of a firm exporting services to be successful and move into higher-level services depends upon firm employees' ability to perform American or European cultural repertoires. This is due in part to the fact that the majority of offshore services exported from India go to US based clients (61 percent) with the United Kingdom ranked as the second largest market (NASSCOM, 2010). However, its not just that western client are the customers, but that the style and manner those services are provided to customer is itself shaped by behaviors, modes of speaking and interacting that are culturally dependent. Therefore, the cultural skills taught in offshore call centers in India are reminiscent of and build upon repertoires learned during the British colonial period (Mirchandani & Maitra, 2007). These skills include familiarity with the English language, Western dress, some Western business practices and cultural norms, and Western socio-political institutions, such as the legal system and educational system. The skills and behaviors valued in both the colonial and the contemporary periods are those possessed by the dominant trading partner.

Despite the imperial, one-sided nature of skill learning and adoption in India, the contemporary offshore outsourcing service industry in India differs from the effect colonialism had on earlier Indian development. Under British colonialism India's share of global income declined from 22.6 percent in 1700 to 3.8 percent in 1952 (Maddison, 2007) and skill levels and industrial capabilities in leading industries, such as textiles,

also declined.⁹⁴ Today, the offshore service industry is growing and characterized by a definitive deepening of skills and capabilities moving from exports in back office and call center services into a variety of knowledge intensive professional services.

While India's British colonial legacy has provided India with some skills that help its modern workforce perform intercultural work, differences in cultural repertoires between India and the West remain. There is also considerable internal variation in cultural repertoires amongst both "Indians" and "Westerners." Within India, for example, cultural practices differ significantly between the north and south, urban and rural, and even between and within individual Indian states, which tend to be organized along specific linguistic and cultural lines.⁹⁵ Despite the diversity of the Indian citizenry, Indian knowledge professionals are a much more homogenous group because they predominately live and work in urban areas,⁹⁶ are educated in higher quality urban schools with stronger English language instruction,⁹⁷ and generally hail from middle to high caste positions (Upadhyya & Vasavi, 2006). These employee attributes ensure the industry retains high levels of cultural capital required by the offshore outsourcing industry.

iii. A Theory of Cultural Labor

I use the term cultural labor to refer to the management of individuals' cultural repertoires that are deployed to create the sensation for the client or customer that they are interacting with somebody from their same culture. Jobs requiring cultural labor have

⁹⁴ Prior to colonization, India was one of most advanced textile producers in the world. Much of this artesian skill was lost when Britain flooded the Indian market with cheap, mass produced textiles. See (Patnaik, 1999).

⁹⁵ Southern Indian states in particular were formed according to the dominant regional linguistic communities residing in the area.

⁹⁶ 92.7 percent of IT and ITES industry exports come from just 7 cities in India (NASSCOM, 2009a).

⁹⁷ Personal interview, Director, NASSCOM, April 7, 2009.

three basic characteristics. First, they require interaction with customers. This interaction may occur face-to-face, voice-to-voice, or virtually through emails and other collaborative technologies. Second, they require that workers make customers feel “at home” by utilizing skills and repertoires that minimize or erase cultural difference and the misunderstandings that may result from those differences. Third, they allow the employer, through training, to regulate and shape the outward cultural expressions of employees.

Cultural laborers are produced through the teaching of specific cultural repertoires using a combination of various methods operating at different levels of analysis. At the macro and meso-levels, cultural repertoires may be diffused through a history of colonial domination, through popular consumption of Western or Western inspired media (i.e. cultural imperialism via the culture industries), and through educational institutions that teach Western modes of interaction, often through instruction in English. These mechanisms diffuse these repertoires unevenly along class and urban-rural divisions.

At the micro level intercultural repertoires are built through iterative intercultural interaction. However, learning the skills required to perform cultural labor through “trial-and-error” on-the-job training in the workplace is too slow and risky for many firms specializing in global services. Making costly mistakes that are the result of cultural misunderstandings can cost firms their clients and reduce future opportunities to move into higher value services. As a result, many firms first pre-select job candidates that have comparatively high levels of cultural capital, intercultural and interpersonal skills, which are developed through a combination of the mechanisms outlined above. Firms then supplement those skills with new hire induction training and follow-up “refresher”

trainings. These firm training practices build upon the macro and meso-level mechanisms and *produce* cultural laborers capable of performing offshore work. Below I identify the different ways cultural labor is deployed in lower-level call center work and in higher-skilled knowledge intensive professional services.

IV. Cultural Labor and Upgrading

i. The Effects of Cultural Skills

The need for cultural skills is common in a wide variety of offshore service work ranging from call center, information technology services, and knowledge intensive professional services, despite significant differences in the technical skills required. The skills required to perform cultural labor achieve three goals: 1) they send signals of quality; 2) they increase effective communication required for collaborative work; and 3) they conform to clients preferred work style. Using the data collected for this study, I draw upon the discourse Indian executives, managers, workers, soft skill trainers, and Western managers use in discussing the challenges resulting from cultural differences between offshore Indian workers and their Western clients as well as their discussion of the solutions to these challenges. Analytically I separate the three goals cultural labor achieves, although in practice these goals may be reached simultaneously.

First, cultural skills affect the perceived quality of services. The need for signals of quality is particularly important for the trade of services due to the variable nature of services and their dependence on interaction to be produced. According to a training consultant, employees that have insufficient cultural sensitivity and understanding cause clients to lose confidence in what the employee is capable of technically and this sentiment is reflected in the interaction with the client and in customer satisfaction

surveys (interview, 5/24/10). Some managers went so far as to remark that cultural and soft skills are as important as technical skills in providing knowledge intensive professional services (GRC, 6/3/10). This is because an employee's work may be technically correct, but if the employee is unable to communicate this to the client then the perception of the work, the relationship, and client confidence in the firm's capability for future work is harmed. This demonstrates the interdependency between technical "hard" skills and "soft," interactive, social and cultural skills. In cross-cultural work, cultural skills shape the perception of technical skills, therefore demonstrating the centrality these skills have in industrial upgrading, even for relatively services that have relatively low levels of interaction with clients, such as 3D Lab work.

Second, cultural skills increase effective cross-cultural communication. The failure of a worker to respond or communicate in the manner that the client is familiar with results in miscommunication of varying degrees (training consultant, 5/24/10). A recurring cultural challenge identified by respondents is that Indian workers tend to be indirect communicators, while Western clients tend to be direct communicators. This shares similarities to what Nadeem refers to as India's "culture of deference" (Nadeem, 2011). According to respondents, Indians live in a society that is more culturally sensitive to status hierarchy; it is generally considered overly direct and rude to tell a superior "no" in reference to a specific request. When Indian employees are asked a difficult question, they may be evasive and verbally agree with their client in order to avert conflict with a perceived superior. These differences in communication styles between North American clients and Indian workers are difficult to bridge. A training consultant, originally from

Scotland, described her biggest challenge as trying to teach Indian workers to communicate more directly:

They weren't used to it. . . . [a call could be] going on 20 minutes longer than it should have gone because the engineer should have said, 'No, that's just not possible. We'll just do it another way' . . . But he won't say [that]. So it was trying to get them just to realize that it's okay just to say, 'I don't know' they find it really difficult to just be direct, I think, and that led to lots of confusion, lots of frustration on the customer side (training consultant, Microsoft, 5/17/10).

In the quote above, the trainer is trying to teach the Indian employee to say “no” or “I don't know,” but found it extremely difficult to get the worker to adopt that more overt communication style. The disconnect between the two communication styles causes lower customer satisfaction and lower confidence in the Indian workers abilities. Indian workers' may also be frustrated that Western clients' fail to pick up that something cannot be done.

Another example where differing communication styles can lead to serious problems in cross cultural business relationship is setting and adhering to deadlines and other expectations around work. For example, when a client asks if a specific service can be implemented by a specific date and hears “yes,” from an Indian offshore worker the Western client will expect that the service will be implemented by that date. This is because in the United States people tend to take explicitly articulated statements at face value. If that implementation date is not met, however, the client will be upset, believing that the vendor did not meet work expectations and may have deceived him or her. However, the Indian worker who was asked to follow through on a difficult request may be unaware that the client views the verbal commitment as binding. This is because the subtext of what the Indian worker communicates, which the Western client may fail to pick up on, is “we will try.” Consistent with these observations, another North American

manager commenting upon his Indian offshore workers wrote that, “People say ‘yes’ to requests; however it requires constant follow-up for them to deliver” (Manager of North American multinational, personal email correspondence, 11/8/09). Failure to meet client deadlines and other explicit work expectations may be terms for ending a relationship or at the very least cautiousness in allowing the offshore team to manage more critical business tasks. This, in turn, may have a detrimental effect on the future offshoring relationship, especially as it relates to moving into higher value tasks.

Third, cultural skills allow workers to emulate Western behavioral styles that embody an individualized approach to work. Offshore service workers are expected to show “initiative,” be “assertive,” take “ownership of work,” demonstrate “leadership,” and “drive customer value.” Indian training consultants, firm managers, employees, and western business managers reported that Indian workers often lack these skills. A challenge with some of these ideas, such as taking “ownership of work,” demonstrating “leadership,” and “driving customer value,” is their abstract nature. These ideas are connected to a particular western business context that is difficult to translate outside that context. Workers may not intuitively know what these ideas mean and may not know how to model them without tangible examples or practice. Westerners, such as managers and firm employee trainers, also face challenges in trying to explain these behaviors. According to an Evalueserve manager providing business research services, employees need guidance and training to embody the approach required by clients:

You have to really guide them [employees] extensively and [a] lot of times, *even how to interact* with clients, how they should structure their e-mails, *what kind of questions they are free to ask*, and how they should think, rather *than ‘taking’ work, they should ‘own’ work* . . . you don’t get [these skills] in less than one year [emphasis added] (personal interview, Manager, Evalueserve, 2/13/08).

This quote shows the manager's perception that his employees need help learning to act assertively, by learning the appropriate questions to ask a client. The manager also emphasizes the importance of ownership, when he says employees should not passively accept work, but "own work," by actively take responsibility for work output. The quote demonstrates the individualized approaches that Indian firms need to possess in order to gain the acceptance and confidence of their clients. Finally, this quote also illuminates the significant time and experience employees require in order to develop and internalize these skills. The fact that workers need a year or more of experience to develop these more interpretive and assertive modes of acting, underscores the deeper level at which these behaviors operate at, relative to more superficial Western cultural scripts that call centers employees may employ.

A senior manager of a North American multinational company responsible for offshoring services to India wrote about the performance problems that may result from cultural differences and the inability to internalize western business norms toward work:

The test team is the weakest part of the organization in terms of efficiency and effectiveness. [The group is characterized by a] very strong focus on metrics (execution rate, pass rate, etc.) with no real understanding of the impact or what really needs to be done to report on quality and customer value . . . *The biggest obstacle is [a] change in culture . . . The rituals are followed religiously, but some of the spirit is lost* (Personal email correspondence, emphasis added, 11/10/09).

In the above quote the manager sees the team as utilizing explicit metrics measuring productivity, yet fail to deliver customer value, which is not captured by these metrics. When later asked to clarify what this manager meant, he said he thought that the team was "simply going through the motions," rather than following through by delivering true value to the customer (North American Manager, 6/10/10). In this case, meeting metrics

and following rules did not translate into the desired labor output or quality, and in fact was indicative of the perceived lower technical competence of the team. The manager was frustrated by his perception that the Indian team produced work that was superficial and needed a high degree of guidance from management in order to meet work expectations relative to the three other teams he manages across North America. This experience suggests management required a deeper level of acting than the superficial performance that the worker provided.

The manager's perceptions that his offshore Indian workers are unable to take "ownership" and deliver customer value led to his decision that the Indian team should manage a mature product line, rather than the new strategic one under development. This decision was in contrast to his initial view when he took over management of the offshore team, at which point he considered broadening the Indian team's responsibilities from low-level maintenance work to include "ownership of a whole product" (Manager of North American multinational, personal interviews, 2/1/09; 6/10/10). Yet, the manager decided to put the Indian team in charge of a mature service line performing low-level maintenance work. Working on a mature service line requires lower skill levels and offers fewer opportunities to develop new skills that can be used on higher-level future projects. While the manager views this as a step up in responsibility, what is noteworthy is his scaling back on his initial plans of utilizing their technical skills on high-value strategic products based on his perception that the team lacked the ability to deliver "high value" work.

Performing western behavioral styles, such as showing "initiative" and being "assertive," may overlap with the previous stated goal of advancing effective

communication required for collaborative work. One example is encouraging workers to proactively ask clarifying questions around the details of work. A manager at Infosys involved in starting up a large employee project emphasized the importance of developing interpersonal communication skills and an understanding of what norms are expected in the U.S. business culture in her employees:

I want . . . [employees] extremely comfortable talking on the phone with the client, I want them to get attuned to an American accent because the minute they come on the floor, the day they join me, there is going to be trainers from the US here for the next eight weeks. They need to be able to understand them. They need to be able to be comfortable with them and ask the right questions. They need to be able to speak up, for example, which is a huge issue with lot of Indians (personal interview, Director, Infosys, 4/23/09).

The quote above highlights the difficulty that India workers may have in understanding American clients, both in terms of their accents and cultural norms. As indicated above in the discussion of indirect communication, Indian workers face challenges adopting the communication style of their American counterparts. Here, the respondent notes the importance of learning to proactively ask questions when something is unclear. American businesspeople expect to hear clarifying questions if employees are unclear about instructions, instead of looking for more tacit cues that employees may not understand the instructions provided. If Indian workers do not assimilate these Western norms of communication there is a danger of miscommunication, since Western workers are not taught or expected to learn Indian communication practices.

ii. Cultural Skills Over the Course of the Relationship

There are particular periods in offshore outsourcing relationships when firms and employees possess fewer soft skills and weaker cross-cultural skills; at such times, there is a higher propensity for cultural misunderstanding with clients. These periods are when an Indian firm first begins to offshore services, adopt new clients, expand into new

services, and when employees are newly hired or promoted into positions with increased responsibility for managing customers interaction.

During the initial founding of an independent offshore service firm, cultural expertise of clients in the new organization is particularly low. Executives and managers at all 4 firms reported the highest level of difficulty in adopting new cultural repertoires during the founding period of company or division. However, cultural labor was particularly important for firms that are more dependent upon their clients for learning, such as the GRC and Infosys. The GRC reported that during the first 8 to 12 months the company encountered many “cultural problems,” but after this phase they were no longer regularly occurring issues (personal interview, Manager, 6/3/10). This is because repeated interaction tends to reduce the level of cultural misunderstandings and improves the nature of the interaction.

Another period when firms are vulnerable to cultural misunderstanding is during the initial stages of an offshoring relationship either during a short-term ad hoc project or during a transitioning of service from the client site to a full-time offshore dedicated team. Both varieties require the offshore firm to learn a number of new skills, while also gaining the client’s trust in their capabilities. A transition manager at Infosys reported that those employees working on transitioning services from one-country to another need industry specific knowledge as well as good people skills and soft skills (personal interview, 11/29/07). The full-time dedicated team format is characterized by more one-on-one interaction between onshore and offshore workers, which speeds up the learning of cultural skills required to manage this interaction. Offshore firms, however, are much more likely to secure a full-time equivalent dedicated team contract only after first

providing services successfully in an ad-hoc short-term trial run. Client-vendor interaction in the ad-hoc set up is more tightly controlled by offshore management and team leaders and it occurs less frequently, with conference calls occurring only once every two weeks around key service milestones, rather than on a daily basis.

Another critical period is when a new employee joins the team servicing offshore clients and when employees are promoted into positions in which they are responsible for managing client relationships. While firm training programs accelerate the cultural learning, the threat of new employees doing or saying something damaging to the relationship still exists. For this reason, companies routinely funnel interaction with the client through managers and team leaders who have more experience interacting with specific clients from specific cultures. This client management structure is particularly true in ad hoc or one-time projects (personal interview, Group Manager, Evalueserve, 2/13/08). Some clients, especially those using dedicated offshore teams, which rely on full time offshore labor, often want to have one-on-one contact with offshore and onsite workers, rather than having all information filtered and delivered through managers. In both circumstance, however, there is additional training and observation that must occur after new hire induction training, but prior to full client interaction:

We would love to have all our people interact with clients on [a] day-to-day basis. But we would *generally train them for 6 to 8 months in the finer aspects of client communication*. A) There is the way you communicate things. B) You try and improve your accent, right? How do you introduce yourself, so on and so forth? So there is a training period of 6-8 months where they join client calls, see how the processes [works] and then they start interacting (Group Manager, Evalueserve, 2/13/08).

Learning the style of communicating is important. This manager also emphasizes that employees need to learn to speak in the “right” accent style – just as call center workers

are trained to do – before they are permitted to manage because they spend significant time managing client relationships. This demonstrates that even in high value services, such as financial research, require convincing performances of surface acting, such as the presentation skills on a call or on a client visit and speaking in an accent that sounds less “Indian.”

V. Producing Cultural Laborers: Training Processes

Firms produce cultural laborers through intensive soft skill and cultural training. These training programs are part of a broader trend in India to invest heavily in upgrading workers skills. These relatively high investments in training in India are due to two factors. First, there is growing consensus that there is a shortage of employable skilled workers in the IT and ITES industry and cross-cultural skills were a key skill deficiency identified by studies and by interview respondents (NASSCOM & McKinsey, 2005). Second, a tightening labor market in services has caused firms to increasingly recruit employees who have lower levels of English linguistic and cross-cultural skills than earlier recruits. This is true across the Indian service export market, but is most pronounced at the lower end of the skill spectrum, which has experienced the highest increase in the recruitment of employees hailing from rural areas that have lower quality English education, less exposure to Western culture, English language media and speakers, when compared to more cosmopolitan urban centers. As a result of the changing demographic of workers in this sector and feedback from customer satisfaction surveys, outsourcing firms have increased investments in cultural sensitivity and soft skill training more generally. Soft skill and cultural sensitivity trainings are a widespread

industry practice that not only target lower skill employees, but also highly educated urban employees with high levels of cultural capital.

Firm training is focused on producing laborers that fit the cultural expectations for a global workforce. Many of the goals and skills training sessions purport to teach in knowledge intensive professional services and call center work are similar, however, in practice there are differences in the cultural skills emphasized, learned, and developed. For example, one training course targeting call center employees sought to teach “etiquette, willingness to take responsibility, grooming, consistency, time management, attentiveness, emotional quotient [measure of emotional management], ownership, team spirit, initiative” (See Table 6.1: Goals and Skills from Business Process Training Course). In practice, however, the two-week training schedule did not focus on developing many of these skills, such as “ownership” and “team spirit.” Instead, with the content of the training focused on material and exercises that emphasized the practice of those skills that will most easily help Indian agents “pass” for employees from the West. The majority of the actual time in training is spent learning grammar and language mechanics (i.e. subject verb agreement), pronunciation, eliminating “Indianisms” from English speech (i.e. substitute the Indian phrase “out-of-station” for “out-of-town”), teaching forms of American and British humor (sarcasm, etc), geography, sports, and other “local” small talk. These relatively short training sessions focus on providing workers the skills and practice to provide more convincing surface acting performances of cultural labor.

Knowledge process outsourcing training sessions may touch upon these linguistic skills, but the major emphasis is on learning western cultural repertoires that reduce

miscommunication and embodying western behaviors, such as leadership and presentation skills. That is to say, in knowledge intensive services, workers are expected to develop the cultural skills to provide deeper, more embodied forms of acting. Knowledge workers are expected to use higher-level thinking skills, interpretation, and analysis, and are expected to act with more autonomy. For example, Evalueserve encouraged employees to present power point presentations that were video taped, in order to practice providing presentations for clients and evaluate their performance.

Managers and workers reported valuing these trainings, which suggests that workers may not feel the forms of alienation and disenchantment associated with performing emotional labor in lower value interactive services work.⁹⁸ A manager from an offshore teleradiology center emphasized the importance of learning these cultural and interactional skills because,

Technical aspects, to my mind, are easier to practice and pick up. The soft skills, where you have limited [opportunities to practice] interactions, and you have to get those interactions right with the customer, plays a very important role in terms of the relationship, in terms of enhancing business (Manager, GRC, 6/3/10).

The passage above shows the limited opportunity workers have to master these soft skills within the everyday work routine, but also how important it is to have those skills in order to build the business relationship.

Indian firm managers, employees, and firm trainers from this study reported that cultural sensitivity trainings helped improve interaction and reduced cultural misunderstandings that could have a negative impact on cross-cultural business relationships. Firm managers reported that their firm's customer satisfaction surveys

⁹⁸ See (Hochschild, 1983; Leidner, 1993). My ethnographic observations and interviews did not uncover the "games" workers sometimes use to resist management control (Burawoy, 1996; Sherman, 2006). The absence of these games may be due to the relatively high levels of autonomy and class position occupied by higher value service workers relative to low value service workers who often engage in these games.

reflected the efficacy of their firm's training programs. If these training programs in fact help improve cross-cultural interaction as respondents claim, it is curious that only Indian employees undergo this training. Training of both "onshore" Western clients and Indian "offshore" labor would further increase the effectiveness of communication and collaborative work, yet cultural sensitivity training of western workers rarely occurs. The one sided nature of this training reflects power difference between client and vendor; developed nations and developing nations. The effect of this one-sided cultural training results in cultural assimilation of the Indians into Western cultural modes of behavior.

VI. Labor Process Control and Constraints on Cultural Labor

The cultural repertoires taught through intensive soft skill and cultural training produce cultural laborers, yet the ability of workers to deploy these repertoires is partly constrained by an emphasis on pleasing customers and increasing management control over the labor process. Workers are taught to produce "customer delight," and treat the customer as "king" during employee induction trainings and within the context of on-the-job training. These messages are at odds with the cultural values workers are expected to embody with customers, such as initiative, assertiveness, and saying "no" to difficult to achieve requests from clients.

The offshore model, particularly in knowledge intensive services, is dependent upon securing repeat business with existing customers. In financial services, both Infosys and Evalueserve reported that at least 75 percent of their business was derived from repeat business from existing customers. In teleradiology this figure is closer to 100 percent, since the significant entry barriers and time investment required to document that

medical, legal, and privacy standards and regulations (i.e. medical credentials, malpractice insurance, appropriate state medical licenses, compliance with privacy regulations) are met and on record makes short term business relationships impractical. Firm dependence on repeat business with existing customers makes customer satisfaction a very high priority. One of the gauges firms use to determine a client's willingness to continue to do repeat business is through customer satisfaction surveys. As a result, all firms from this study reported detailed processes of monitoring customer feedback to ensure clients' are happy with their services. At a financial service firm, customer satisfaction surveys that are returned with a rating lower than a 4 out of 5 requires the operations team responsible for the project to provide a formal explanation of what went wrong:

The feedback form, once it is filled [out] by the client, *it goes to every one in the top management*. We generally get ratings of about 4/5 so we are not happy with anything, which dips [below] 3 is 'meets expectations,' 4 is 'exceeds', and 5 is 'delighted.' Anything at 3; then the top management gets involved because feedback on each project goes to the top management and then we basically discuss what went wrong and then we call the client to understand why (group manager, Evalueserve, 2/13/10).

Another Senior Manager discussed the process for handling ratings that were satisfactory or below by upper management:

If we get ratings of satisfactory or below, then it goes to the entire top management, including [individual names omitted], and then there is *lots of internal fire* as to why?, what happened?, what went wrong?, so that we got a rating lower than meeting expectation rating (Assistant VP, Evalueserve, 2/13/08).

The high visibility of these customer satisfaction surveys to executive management means that there is a considerable top down pressure on middle managers and workers to ensure that these customer survey reports come back with high ratings. I argue that this

pressure puts limits on the resistance a worker can make on customer demands around work requests and delivery timelines.

In high value offshore professional services, the level of management oversight is higher than traditional professional work, which further constrains workers expressions and behaviors. Professions are generally characterized by expertise, power, and authority (Abbott, 1988) and professionals are expected to use high-level thinking skills, interpretative skill and possess a degree of autonomy. Offshore professional work is not scripted like call center work, yet professionals operating in an offshore work environment have lower levels of power and authority relative to traditional professionals due to the way the labor process has been constructed. These changes in the labor process are driven by perceptions that services from lower cost labor markets are characterized by lower quality and a lack of familiarity with training and educational norms.

The delivery of teleradiology services is an area characterized by high levels of management oversight. According to the supervising Indian certified radiologist at a teleradiology services company, professionals working overseas are subject to more oversight, both by the Indian service provider and the client:

A new radiologist joining there [at the client site] would say this is how I see it and seeks no approval. Unfortunately, since we are doing it from a distance, the kind of checks, which are put in are more stringent and so we have to comply to an individual who is a standard and then we move on from there (supervising radiologist, GRC, 4/16/08).

The quote above shows that the client defines the acceptable standard, embodied in the judgment of a designated person, who offshore workers must conform to. Comparing the work processes at the client site to the work process in the offshore arrangement provides evidence of increased management oversight, which in turn constrains the expression of

cultural labor taught articulated in firm training. Turning a two-dimensional radiological image into a three-dimensional image helps radiologists see and diagnose abnormalities affecting patient health. This work process used to produce these images at a large US based hospital has two basic steps (see Table 6.2). First, a U.S. technologist manipulate the two dimensional CT scan or MRI they receive with computer software. Second, the technologist electronically sends the enhanced image to an American Board Radiologist in the hospital for interpretation. To produce the same finished product for the same US hospital, however, the offshore team at the GRC must conduct two to three additional steps (see Table 6.3). After the Indian technologist produces the three-dimensional image an Indian certified radiologist and the supervising Indian radiologist review the image. The client's team of technologists audits 1 out of 10 image from the offshore facility before it is sent to the American Board Radiologist for an interpretation. The additional oversight of offshore work erode the professional autonomy and control over work and further suggest the difficulty in taking complete "ownership" of work.

VII. Conclusion

Success in offshore service work is dependent on firms and their workers to perform cultural labor. Performing cultural labor requires interactional skills, which are culturally specific to a western business context. In practice, the performance of cultural labor is one-sided, mirroring the unequal power relations that this trade takes place within. Firms that successfully hire and train employees with Western cultural skills are at an advantage in retaining satisfied customers and gaining their confidence to do higher value work. The skills required to perform cultural labor help send signals of quality,

increase effective communication required for collaborative work, and conform to clients preferred work style. The ability for cross-cultural teams to communicate together without misunderstanding each other is central for the delivery of knowledge intensive services because it is through these client-vendor interactions that clients clarify and modify work requirements and provide feedback on service quality.

Firm level training produce cultural laborers that in turn help Indian firms deliver services in the style that their customers require. Training in knowledge intensive professional services emphasizes the clarity of written and verbal communication with clients and embodying the attitudes held by Westerners. This differs from the training used to produce cultural laborers in offshore call center, which is designed to mask employees' true identity and calling location through the training of Western language pronunciation and manner of speaking.

The adoption and expression of western cultural behaviors are hampered to a degree through firm emphasis on creating "customer delight" and increased control over the labor process relative to traditional "onshore" professional services. Further control of cultural labor occurs through the structuring of client-vendor cross-cultural interaction through management with more developed cultural repertoires. Restructuring the offshore labor delivery with more oversight, both by the Indian firm and on the client site, further constrains the opportunities to embody certain western behaviors such as ownership, assertiveness, and worker autonomy. In the future, the articulation of the required cultural skills within the offshore service market will likely change as the geographic distribution of offshore service continues to shift to other markets.

Table 6.1: Goals and Skills from Business Process Training Course

BPO finishing school Course Outline	<ul style="list-style-type: none"> • Effective Business Writing in English • Expanding Active Business Vocabulary • MS Outlook & Typing • Business English Idioms & Expressions 	<ul style="list-style-type: none"> • Cross Cultural Communication Techniques • Global Business Etiquette • Telephone Etiquette & Active Listening • Email Etiquette
10 Corporate Skills	<ul style="list-style-type: none"> • Etiquette • Grooming • Consistency • Time Management • Emotional Quotient [measure of emotional management] 	<ul style="list-style-type: none"> • Ownership • Attentiveness • Team Spirit • Initiative • Willingness to take responsibility

Table 6.2: GRC US based client’s internal process for performing 3D scans

Initial read
U.S. Technologist → final sign off authority
American Board Radiologist

Table 6.3: Offshore service delivery work process for same US based client

Technologist →
Indian certified Doctor →
Supervising Indian Radiologist →
Audit check from client technologists →
Final sign off by American Radiologist

Table 6.4: Cultural Labor Continuum of Surface and Deep Acting

Depth of Acting	Continuum of Cultural Behaviors in Offshore Service Work
Surface	<ul style="list-style-type: none"> • Ability to engage in regionally specific “small talk” (weather, sports, etc) • Email and phone etiquette • Accent neutralization • Adopting more assertive behavioral style • Adhering to goals associated with western business culture (creating value, etc) • Overcoming “culture of deference” – ability to say “no” to superiors • Internalization of western business logic, mode of thinking
More consistent with Swidler’s “toolkit” model	
More consistent with Bourdieu’s habitus	
Deep	

Chapter 7 Conclusion

This analysis in this dissertation identified four causal mechanisms for industrial upgrading in India's ITES industry. These are 1) the role of trade associations 2) firm level knowledge transfer through migration and client interaction 3) firm level training programs and 4) firm level creation of cultural knowledge. In India, trade associations and firms emerged as the central developmental actors driving industry development in IT enabled services, with the state playing an increasingly supporting role. Upgrading occurred through a number of association and firm level mechanisms that built skills and bolstered perceptions of the industry over time. Trade associations in particular played a key role in industry development by taking up four evolving roles in their interactions with the state, firms, and other entities, both inside and outside India. First, trade associations engaged in lobbying and made direct interventions in policy making. In filling these two roles, trade associations fostered the creation of developmental policies that removed constraints on growth (i.e. infrastructure and labor limitations) and increased profitability. Second, trade associations engaged in industry promotion and image management. In filling these latter two roles, trade associations shaped perceptions of industry capabilities both within India and abroad. In addition to the efforts of trade associations, firms helped build both technical and cultural skills through client relationships, migration of technical professionals, and firm level training programs.

The analysis of the trade association and firm roles described above suggests that upgrading is not only about the deepening of industry skills, but also signaling credibility in higher-level skills. Credibility is important in any industry, but it takes on a particular significance in the service industry, because services are more difficult to define relative to manufactured commodities. It is precisely because service quality is difficult to assess that credibility in service delivery becomes an important indicator of service capability. Further still, credibility takes on even greater importance in the context of offshore outsourcing work, wherein developing countries must prove their capacities to deliver high-level knowledge services to markets in developed countries.

I. Institutions and Mechanisms for Upgrading

State investments in higher education and the creation of early industrial policies were necessary, but an insufficient condition for the establishment of the ITES industry and subsequent upgrading. In Chapter 2 I described the significant leadership and investments that the state provided in higher education, which were instrumental in creating a foundational technical base for later industry development. The state also crafted early industry policy framework that enabled development, even if these policies required significant improvements to meet evolving industry needs. While the state was the key actor through the 1970s, things began to shift as the state began to open up during the 1980s to cooperate with industry.

Industry associations, emerged as key actors working alongside government to help the facilitate upgrading over time. State efforts alone around higher education were insufficient to meet the growing industry needs, particularly as industry growth accelerated during the 1990s. The formation of NASSCOM in 1988 and its growing

capability over time, which I described in Chapter 3, was crucial in helping to fine-tune industrial policy and remove constraints on growth. Trade associations were also important channels of information to the state, performing this function through lobbying efforts and interaction with government across functional areas of the state. During the late 1990s and early 2000s, trade associations began disseminating firm level practices in technical and cultural sensitivity training to other firms, sharing industry research with member companies and hosting conferences and panels on technical and interactive industry skills and practices. Trade associations were also “pulling up” firm level practices to the state level, providing industry level recommendations on approaches to training and higher education reform. The state, at both the local and federal levels, approached trade associations for recommendations to guide further industrial development. The state went on to ask NASSCOM to write policy recommendations that were later implemented at the local and federal level.

Government and industry coordination within the IT and ITES industry, facilitated by NASSCOM, is part of a broader shift away from centralized government that exclusively financed, managed, and led development toward a more decentralized form of industry development that requires the interaction of the state and non-state actors. This shift in state roles is reflected in new state strategies and practices, such as the increasing adoption of public-private partnerships. This increased coordination between state and civil society actors constitutes a break from the more insular and autonomous approach of the state prior to the 1980s (Chibber, 2004; Evans, 1995). The findings of this dissertation suggest, however, that state-society ties alone are not enough to carry out the increasing complexity of private-public partnerships. Leadership is also

required and this leadership has increasingly come from an active trade association that moved beyond a facilitator role of state-society relationships, to also design, draft industrial policies, and manage development projects on behalf of the state. Examples of partnerships where trade associations have provided significant leadership range from spurring industrial development in smaller Tier II and Tier III cities to drastically increasing the production and quality of highly technical workers through educational reform generally and the creation of 20 new IIT institutions of higher education specifically (2009, p. 10; NASSCOM, 2008). Development is occurring through a *partnership* between the state and industry, providing a sharp contrast to both top-down statist models *and* neoliberal theories of the role of the state. While NASSCOM fulfilled a key role in facilitating state and industry partnerships and in upgrading skills more generally, the association was also instrumental in projecting industry capabilities.

NASSCOM's role in "public relations and impression management" was also a key enabler for upgrading. The organization performed this role through its interactions with several different audiences at key points during the industry's history. First, the trade association prompted the state, which was historically biased toward the manufacturing sectors, to provide similar support to the software industry. By capturing the state's attention, NASSCOM lobbied and helped secure tax breaks on exports and deregulation of the telecommunications industry, which enabled growth. These policy changes sent an important message to foreign firms about the opportunities and potential available to them in India's IT industry. NASSCOM also focused on impression management in its interactions with India's own public, using slogans with mass appeal to gain their attention and later garner support for infrastructure projects, such as those in

telecommunications and power, that directly affected the industry's ability to provide services to foreign customers. As the industry grew, NASSCOM increasingly focused on managing the impressions of publics and governments outside India. It focused on improving the international image of the capabilities of Indian labor and firms and the security of sensitive data processed by Indian ITES firms.

i. Firm level mechanisms

Shifting the unit of analysis from trade associations to firms, I find inter-organizational knowledge transfer is a key source of firm level upgrading. In Chapter 4 I identify two principal mechanisms that facilitate knowledge transfer, professional migration and skill upgrading through client interaction. Upgrading through the migration of skilled technical professionals results in much faster and higher level of upgrading than upgrading through client interaction. This is because workers are often performing that work prior to migration and the migration brings their skills and “know-how” into the country. Previous educational credentials and work experience at well-known international firms and hospitals act as a signaling device about the quality and credibility of the founders and, by extension, their firms. Skill upgrading through client relationships deepens skills slowly over time. Within the context of client relationships, onsite visits to clients were important relationship building periods, with employees learning from these clients, but also building their own credibility with the firm through that interaction.

Evalueserve, which primarily gained the knowledge needed for financial services *prior* to the organization's first client engagement, still engaged in such client visits. Here the function of visiting clients was clearly more than just knowledge transfer, since these visits usually occurred after service delivery to clients was already in process and much of what was required for service delivery was obtained through the migration of technical

professionals who were trained and educated abroad. Instead, the primary purpose of these visits was to enable Evalueserve and its employees to form closer relationships with clients, while demonstrating their capabilities as those relationships grew. Client visits and employee movement between developed and developing contexts also provided “cultural” learning opportunities, which are the focus of Chapter 6.

Firms create knowledge and upgrade skills through investment in firm orchestrated employee-training programs, but these programs also send signals to prospective and existing clients that serve to build firm credibility as knowledge service providers (Chapter 5). Firms simultaneously build skills and communicate their capabilities through the building of “universities,” distribution of “white papers” that provide analysis and innovative approaches to research, running “academic” training sessions including hosting symposiums with industry professionals. Another way that technical capabilities are communicated is through the term “knowledge process outsourcing” itself, which was a term coined by an Evalueserve executive to differentiate the firm’s services from lower value and more commoditized back office and voice services, such as data entry and call centers. The various firm level efforts to build technical and industry knowledge increases firm capabilities, but this process is not just about obtaining and building knowledge, but also makes a claim that one possesses “knowledge.”

Cross-cultural service work requires technical as well as non-technical skills (Chapter 6). In particular, IT enabled services require cultural labor, which I define as the management of individuals’ cultural repertoires that are deployed to create the sensation for the client or customer that they are interacting with somebody from their

same culture. At its core, the performance of cultural labor is meant to manage client impressions and signal firm credibility in services. The manner in which services are provided to a client shape the overall perception of the value of that service. Cultural labor operates on a continuum ranging from surface to deep acting. Lower value work tends to use more surface acting, such as engaging in small talk specific to a client's location and the adoption of western accents and pseudonyms in call center work (i.e. Steve instead of Suresh) to disguise one's national identity as is common practice in offshore call center work. Higher value services tend to require deeper acting, where workers need to internalize "business cultures" that are rooted in the West by relying on explicit rather than tacit communication strategies and abandoning so called "cultures of deference," enabling workers to assertively resist unobtainable requests from superiors and clients.

In India, cultural skills build upon a tradition of colonialism and colonial education, but may also be generated and augmented through other means. India-based firms incorporate cultural awareness and interactive soft skills training into broader training programs that also build technical skills and industry specific knowledge. Cultural knowledge and soft skills are screened for in hiring practices and then further developed through firm training programs and through interaction with clients. The firm level screening processes and programs were in turn aggregated by NASSCOM at the industry level. NASSCOM developed an industry wide skill assessment tests, called the NASSCOM Assessment of Competence, that is used to screen industry job candidates, testing cultural rooted "soft" skills, such as an ability to read, write, and listen effectively in English and demonstrate command of western business etiquette. NASSCOM also

communicated to government officials the lack of preparedness Indian graduates had in interactive cultural skills and the need to address these deficiencies in higher education curriculum reform. Curriculum changes have already been adopted in many private colleges and universities and the central government is in the process of implementing these changes into its program to improve technical higher education. Elements of firm level training programs that teach cultural sensitivity and soft skills have been incorporated into national educational policy in “The Technology, Education, Quality Improvement Programme,” which is a local and central government program, being rolled out across India emphasizing improvements of “soft skills” alongside improvements in technical education (Department of Higher Education, 2008, p. 13).

II. Challenging Development Paradigms

Trade associations and firms emerged as the central developmental actors in the development and upgrading of India’s IT enabled services industry. This approach to industry development contrasts with both the approach of the state in previous periods of development in India and the role of the state in successful developmental models based on other country cases. The developmental model theorized in this dissertation diverges from the central mechanism identified by Vivek Chibber (Chibber, 2004). According to his account the developmental model that regimes choose to adopt shapes the role of the state and its relationship to industry. Chibber argues that India’s embrace of import substitution industrialization (ISI) provided industry an incentive to resist state authority and protect domestic markets, which had an adverse effect on development and innovation in the country, while Korea’s adoption of export led industrialization (ELI)

created incentives for industry to accept the state's lead and their authority to discipline capital.

My analysis finds the development in the IT and ITES industries followed a very different pattern that diverges from the route identified by Chibber. From the emergence of the software and services industry, both the state and industry were focused on the export market. The Indian state incentivized exports of software in 1972 with concessions on import duties on IT hardware if the machines were used for export purposes.⁹⁹ With a developmental focus on export markets rather than internal domestic markets, Indian capitalists may have had new incentives to work with the state, but the Indian state never gained the ability to discipline capital, as was the defining feature of South Korea's developmental model. Instead, firms and their trade association emerged as developmental leaders in their own right, gaining more authority over the state and the state's developmental projects. Rather than the state disciplining capital in accordance with the state's industrial developmental plan, as in Korea, the Indian state solicited industry for their recommendations for planning and gave industry the authority to design developmental plans on behalf of the state. This developmental authority was centralized in trade associations, which emerged as the central actor driving industry development.

The emergence and dominance of trade associations in the industry development process simultaneously reaffirms the importance of "embeddedness," while also showing the limitations of an understanding of the emergent actors that can help produce embeddedness. The developmental state literature refers to associations as facilitators in state-society relations and tends to characterize associational roles primarily in terms of

⁹⁹ Financial incentives are a classic strategy, used by developmental states, to entice entrepreneurs and firms to invest in nascent markets.

the forum they provide for policy makers and industry leaders to interact and create state-society linkages (Evans, 1995; Pingle, 1999; Saxenian, 2000). More recent studies have found that business associations can directly affect actions taken by the state (Schneider, 2004; Sinha, 2005). While the developmental state literature recognizes that trade associations can be a source of state-society relations, they have not been found to be *the* source of leadership in development. Yet the analysis in this dissertation demonstrates the ways in which trade associations may move beyond their traditional lobbying role to become developmental actors in their own right. This institutional arrangement differs drastically from the developmental bureaucratic states of South Korea and Japan, where the state was the authoritative and leading force behind industrial development.

The Indian approach to development also differs from the developmental network state (DNS). The DNS is more “hands on” than the DBS and involves public sector officials working closely with industry to identify and support new strategic industries (Block, 2008; O’Riain, 2004). However, in India, the “hands on” work of development is initiated and largely performed by industry, led by the trade associations, rather than the state. It is associations that identify new strategic opportunities for industry, based on their connections to member firms and their own research of the market, and then coordinate with the state to enlist their support for developmental projects benefiting industry. The role of the Indian state has generally been reactive to industry problems, rather than proactive. The state’s slow response in addressing the growing technical skill shortage in higher education during the 1990s and 2000s and key role trade associations and firms played in coordinating policy to address this problem illustrates the difference from the DNS.

A key reason why industry, rather than the state, assumed a leadership role in industry development is based upon the qualities of services themselves. There are three major points of differentiation between services and manufacturing that have implications on the institutional arrangement that foster industry development and on the state's ability to provide leadership for industry development specifically. First, the intrinsic qualities of services themselves mean that industry, rather than the state, has access to knowledge for development. In high technology manufacturing the state's knowledge may be limited, since it too also does not have access to firm level processes (Amsden, 2001). In services the state has even less access to production knowledge. This is because services are interaction intensive and production and consumption are difficult to decouple. The technical and cultural expertise required for service delivery is also enmeshed within service relationships themselves. This is particularly true in services that are highly integrated into clients' work processes, such as those provided by the GRC and Infosys, which make knowledge relationally dependent and difficult to extract. The interactive nature of services mean that the firms engaged in these relationships are the best source of information about what is needed for service delivery and the state does not have access to this knowledge.

In manufacturing, in contrast, knowledge required for development is less embedded in relationships. Technology transfer is a major source of industry learning in manufacturing and while technology is tacit and never completely codifiable, even when copying it (Amsden, 2001, p. 51), it is still much easier to learn production insight for manufacturing process independent of customer relationships than is the case in services. This is due in part because developing countries may also gain insight into production

requirements for high technology commodities through the process of “reverse engineering.” The manufacturing success of Korea and Taiwan depended upon the ability to reverse engineer products designed in developed markets (Lall, 2003). Reverse engineering does not require interaction and is performed *within* the developing country itself. In services, however, it is difficult to reverse engineer an interactive process and learning is difficult outside of service relationships.

Second, the relatively low capital intensiveness of services, relative to manufacturing, makes firms less reliant on state leadership. Manufacturing usually requires large investments in physical machinery, while services; particularly at the lower skill level, require few capital investments beyond phone and computer equipment.¹⁰⁰ Manufacturing is capital intensive, requiring more state help in mobilizing capital to spur development. For example, the creation of a semi-conductor manufacturing industry with its requisite “cleanrooms” is an extremely capital and technologically intensive process. Under these circumstances, initial state investment and coordination are key components of creating a fledgling industry as the semi-conductor industry in Taiwan demonstrates. The lower relative costs associated with services suggest that this industry has lower barriers of entry for competing firms and nations. It also means that the service industry is less dependent upon the state’s ability to mobilize capital to help support entrepreneurship and reducing financial risk in new strategic industries. The lower capital intensiveness of services, relative to manufacturing, offers a qualification to the historic role developmental state’s play in mobilizing capital. Charles Lindblom observed that

¹⁰⁰ The lower physical capital requirements of services, however, are partially offset by higher total labor costs due to the general labor intensity of services. At the higher end of services “knowledge workers” may be particularly difficult to find and relatively expensive. Nonetheless, start-up costs in services remain generally lower than in manufacturing.

states have strong thumbs, but clumsy fingers (Lindblom, 1977). By this he meant that states have strong thumbs that mobilize capital and affect structural transformation, but clumsy fingers that often lack the dexterity to fine-tune industrial policies. The lower capital intensiveness of services, however, suggests that states may not need as strong of thumbs, at least in the short-term, although state investments in education over the long-term remain crucial in upgrading in services.

Third, manufacturing requires more state-level interaction to coordinate the inward flow of raw materials and the outward flow of exports, relative to services. Material inputs and exported finished product pass through state owned and operated sea and airports and are strictly controlled by custom agencies. For example, a manufacturing company in India that requires steel for production will need to coordinate with governmental officials on import and export regulations. Services that cross national boundaries through telecommunications technologies, in contrast, largely bypass state control. The state does help create telecommunications infrastructure for service transmission and also monitors transmissions for security and safety, yet these oversights are much less restrictive than the infrastructure and custom constraints for the movement of physical products. The interactive nature of service work, its lower initial capital intensiveness, and the decreased scope of state involvement in coordinating the flow of inputs and outputs in services relative to manufacturing serve to marginalize the state in the industry development process.

III. Broader lessons for policy makers

Finding from the dissertation point to key recommendations for policy makers in developing countries that seek to emulate India's service model. Policy makers should adopt an approach to industry development that focuses on skill development as well as credibility building efforts. Policy ought to develop incentives and policies that develop both technical and cultural skills oriented to a specific export market. Skill upgrading takes place most centrally through long-term investments in higher education. However, continued interaction with firms and their representative associations are crucial in order to evaluate the quality and quantity of graduates and their ability to meet changing industry needs.

Policy makers should also entice foreign credentialed professionals to return to their "home" countries to establish business operations to help foster development in skill intensive professional industries. Encouraging returning professionals provides two benefits when compared to more traditional, step-wise approaches to industrial upgrading. First, industry operations can be more quickly established in high value services by attracting highly trained technical professionals when compared to a slower knowledge transfer process taking place through relationships with firms based in developed countries. Second, attracting highly skilled credentialed professionals permits a higher upgrading trajectory. Attracting foreign trained and educated professionals helps bring new skills into the country, but it also "brings in" relationship ties. Entrepreneurs who return "home" bring back with them their network ties with other professionals and to organizations. These ties are important resources that may lead to trade relationships, but the ties abroad also signal credibility in the capabilities of the firm itself.

In order to attract technical professionals additional incentives may be necessary to help overcome the difficulty professionals may have in establishing business operations. Professionals that have credentials from a foreign country are not typically recognized in their own country, which makes earning money in the domestic market illegal and the business venture potentially more risky in the short-term. The state can help ease this burden by relaxing credential requirements in their home market for “pre-approved” credentials from select countries that pass minimum standards. This would enable recent returnees a potential source of income, through domestic consulting, that could help bridge the period from return migration to firm profitability. The state could also provide additional exemptions or deferments that reduce start-up related expenses, such as waived fees for establishing utilities, down payments, and move in expenses for leased space in designated industrial parks.

IV. Looking Ahead: Emerging Upgrading Opportunities in India’s ITES Service Sector

The Indian knowledge intensive service sector is continuing to both broaden in scope and deepen in skill intensity. One area within high-skill professional services that this study sheds light upon is legal process outsourcing (LPO). Offshore legal services are the fastest growing sub-sector in knowledge process outsourcing (KPO) area. In the midst of the global economic crisis, which pushed down overall growth rates of knowledge intensive services, the LPO sector grew by 40 percent and revenue growth from 2010 to 2015 is predicted to be 26 percent annually (Aggarwal, 2010b). There are over 5,200 legal professionals providing offshore services in India and the Philippines, contributing an annual revenue of approximately USD 300 million, and this is expected to reach

18,000 professionals with an annual revenue of USD 960 million by the end of 2015 (Aggarwal, 2010b). Both Evalueserve and Infosys have moved into the legal outsourcing market and provide support in litigation, contract analysis, and legal research. Infosys, in 2009, secured a 300-person project for a well-known legal research company, which constitutes a particularly large project in KPO services, where more typical engagements, such as those at Evalueserve, are 5 to 10 people and a large project has no more than 25 employees.

Despite the current and predicted growth in the volume of offshore legal services, similar professional constraints that made it difficult for upgrading in teleradiology services also apply to legal services. Upgrading opportunities in professional teleradiology services are shaped by the access to professional credentials that are recognized in a firm's target export market (see Chapter 5). At the lower value end of teleradiology services, such as those conducted by the GRC, the scope of work was also reduced relative to the activities conducted by typical technologists. At the GRC, radiologists and technologists focused on 3D lab work and did not interact with patients or capture images with radiology equipment (such as a CT or MRI scanners) as typical technologists do. GRC employees only performed the back-end 3D processing of images. Thus far, LPO services appear to be similarly constrained in scope and ability to upgrade. Offshore legal service providers are prevented from providing high value advising activities to clients without a state license. According to the legal services team lead at Infosys, legal services are, "very specific, restricted to the 'play book'... Right now, we would not advise on any law because we are not entitled to practice law, say in the US, where our clients are" (Infosys, 4/23/09). Legal services in an offshore model are highly

specialized, high in volume, but low in scope, restricted to a predetermined set of activities. Attorneys with Indian law degrees are not allowed to provide legal advice. As a result, they can do the kind of work paralegals do, such as legal research, but they are legally prevented from performing the broader and higher value activities typically completed by US lawyers. Speaking with the Director of LPO services at Infosys (4/23/09):

Respondent: We wouldn't go and mark up a contract based on what we think is good for them. We would tell them that this is what we believe is good for you [the client], but it is left to you [to decide].

Interviewer: That is because you don't know the intricacies of US law?

Respondent: No, I would know, but since we are not allowed to practice law in the US unless we are a registered lawyer there, we cannot provide legal advisory services, so I would not do it.

Based on the Director's response the problem is not the lack of expertise and knowledge by firms, but a lack of access to do higher value work. This underscores the significant professional barriers to upgrading that have less to do with skill acquisition than access to markets. A way around this constraint would be to follow Teleradiology Solutions' lead in hiring professionals who have US credentials. If offshore firms hire US lawyers with the legal credentials recognized in specific state, as Teleradiology Solutions does with its American board certified radiologists, then the company would in a fact be able to provide those higher value-advising services. However, neither Infosys nor Evalueserve appears to be pursuing this strategy.

V. Industry focus on India's Domestic Market

Until recently, India's IT and ITES domestic market has been relatively ignored by firms who tended to favor an export strategy, primarily focused on the US market. The

market focus is becoming more balanced in response to changes in the Indian domestic market and currency markets; IT and ITES firms became more domestically oriented due to the rising economic prosperity of Indian firms, increased domestic familiarity with technology and services and how these can improve organizational efficiencies, and the volatility in currency exchanges, particularly against the dollar, which causes the costs of offshore services and reported firm profits, which were often reported in US dollars, to also fluctuate (See Table 7.1: Dollar to Rupee Currency Exchange 2006-10).¹⁰¹

The increased focus on India's domestic market has implications for industrial upgrading. Some scholars have highlighted that the domestic market presents an opportunity that may lead to additional upgrading (D'Costa & Sridharan, 2004). A major benefit to developing services for the Indian domestic market is that it has fewer entry barriers, both in terms of building credibility and recognition of domestic credentials, and will likely provide new upgrading and innovation opportunities in the future. Reduced entry barriers can provide industry a higher level of control and added opportunities to expand service delivery in terms of both scope and potentially more specialized at the higher skill end. A domestic focus on service delivery may also create innovations in process delivery. This is because the Indian domestic market is a much different operating environment, with a different set of challenges, when compared to developed export markets. But the Indian domestic market will also require new approaches from

¹⁰¹ Fluctuations in currency exchanges, particularly against the dollar, prompted the IT and ITES industries to concentrate on the domestic market as way to diversify risk away from the US market and as a way to increase revenue. On October 31, 2006, 45.25 Indian Rupees equaled 1 US Dollar; but one year later the rupee appreciated by 14.7% and 39.46 Indian Rupees equaled \$1 US Dollar (Evalueserve, 2007). While a rising rupee made US imports cheaper, it also had the effect of making Indian exports more expensive, thereby eroding the labor cost advantage that India provides. IT and ITES service firms sought to mitigate the risk of these currency fluctuations by diversifying into other markets. They focused increasingly upon two other export markets: the European market, which had a strong Euro currency valuation at the time, and Asia, which was characterized by high overall growth rates. The industry also increasingly saw India's domestic market as place to focus their efforts.

those that work in developed markets. Those studying and working at the level of the mass market in developing countries have found that methods of product development, marketing, and pricing schemes that work well in western and developed markets may not work as well in a developing country context (Hart, 2005; Prahalad, 2005). This new operating environment may lead to new service innovations.

The Indian based IT and ITES firms are strongly positioned to grow services in the Indian market, given their familiarity with the marketplace, relative to foreign competitors, and the learning they have acquired or built through knowledge transfer and firm knowledge creation and training. Nonetheless, additional efforts appear to also be necessary, especially to help devise products and services for the less sophisticated small to medium sized Indian business customers. To aid IT and ITES firms in their penetration of the Indian domestic market, each of the major business associations (CII, FICCI, ASSOCHAM) as well as the industry trade association (NASSCOM) developed programs between 2005 and 2006 targeting the domestic market for IT and ITES as a focus for future growth.

Despite the difference between the domestic and export markets, synergies between the markets exist, and what is learned in the export market can be applied to the domestic market resulting in upgrading and expanded scope of service delivery. These synergies are already occurring within the knowledge process outsourcing service sector. Teleradiology Solutions is a clear example of how a firm focused on export markets can use their knowledge and skills to expand services domestically, providing access to more highly skilled and trained technical personnel. Teleradiology Solutions uses the medical expertise that they have acquired and built and the delivery platform they constructed to

also provide remote teleradiology services to rural areas that lack access to radiologists. Teleradiology Solutions is not the only company providing remote teleradiology services within India, but they likely have the deepest expertise due to their knowledge transfer from US institutions and their ability to hire specialists in radiological subfields. Teleradiology Solutions obtained world-class technical expertise from top ranked international universities, then offered additional training through its firm-level “academic” training programs, and made that expertise available through the equipment and delivery capacity that it built to service international customers. All of the necessary investments, both in technical training and infrastructure, were paid for from international teleradiology profits and continuing profits are used to subsidize reduced cost or free services to the domestic market. This practice provides India a clear and direct developmental benefit in attracting foreign trained technical labor to India and also shows how a firm focused on international markets can simultaneously address technical shortages in a developing countries domestic market. The actual radiologists providing services in India’s domestic market are Indian radiologists, rather than US radiologists, but the Indian radiologists have also benefited from Teleradiology Solutions aggregated expertise, which has been disseminated across the firm through its knowledge sharing “academic” sessions. The company also helps rural clinics and hospitals set up the infrastructure to receive patient medical diagnostic images, such as X-rays, MRI scans, CT scans, and ultrasound scans, over the Internet.

Telereadiology Solutions has also built a medical facility on the ground floor of the company’s 5-story office building to treat general patients. The clinic uses a similar cost structure used in the firm’s main-line international teleradiology business, where the

firm uses services targeted at a more affluent population to build a technical and physical expertise to offer subsidized or free services to populations that lack access to medical professionals. The hospital specializes in providing medical services to the sizable “expatriate” community and Indian IT executives and managers that work for nearby multinational and offshore service companies. The hospital uses its technical credibility,¹⁰² new infrastructure, and proximity to IT industrial parks and affluent gated communities to position itself as a preferred medical center for patients that have the means to pay high margins for medical services. These higher margins help offset free and reduced services to poor patients and children in the community.

VI. Replication of the Indian model?

India is the leader of offshore outsourcing and has upgraded beyond low-level back office and voice services, but the field is becoming increasingly competitive with a number of new entrants, concentrated in specific regions, that are seeking to follow India’s offshore service delivery model. Below I assess the potential of these challengers to replicate the Indian model of service development, based on the factors identified in this dissertation, and the long-term opportunities for each challenger to upgrade beyond low value services. This assessment is based upon a combination of industry and scholarly sources and my own analysis of the factors identified in the dissertation. These factors are:

1. Educational system capable of producing high level of technical skills
2. Proactive trade associations able to lead state and industry policy

¹⁰² The hospital is managed by the Co-founder of Teleradiology Solutions who was trained as a pediatric cardiologist at Yale.

3. Domestic environment able to attract return migration of foreign educated and experienced technical professionals
4. High level of firm investments in training
5. Development of cultural skills (language, deep cultural understanding) oriented toward to a sizable export market

The Indian model of IT and ITES services demonstrate the benefits of a large, technically skilled work force. Based upon absolute numbers, the “BRIC economies” (i.e. Brazil, Russia, India, and China) have a clear advantage. Yet, based on the analysis in this dissertation, China appears to be the only BRIC country that has a strong opportunity to challenge India lead in services. Russian lacks the state-industry relations that industry growth requires and Brazil lacks the language skills required to export ITES to Latin American countries or English speaking markets. However, there are some smaller states that also seek to follow Indian’s lead into services that have at least some of the factors identified in the Indian service model. The Philippines sizeable ITES sector, low labor costs, and relative English fluency position the country as a strong challenger to India in higher value services. Below I will briefly analyze the major challengers in Asia, Russia and Eastern Europe, Latin American, and Africa in terms of the factors that lead to India’s success.

i. Asia

China is a late entrant to the offshore service market, but their strong manufacturing base, deep pool of technical talent, and a supportive state provide them with one of the best opportunities to replicate the Indian model of service development. China’s technical talent is the result of consistent and growing state investments in building higher educational institutions capable of producing a massive amount of

technical labor. The educational system produces over three million graduates including 600,000 engineers a year. Industry in China is also characterized by strong government support. While the Chinese state model of development differs from that of India, it does not preclude the state from fostering the ties with the emerging service industry required for growth and upgrading. In addition, recent work suggests that China's approach to development is less top down than many suggest (Appelbaum, et al., 2011), which suggests that the state has the ability to interact with industry and trade associations to get industrial policies fine-tuned. The country has also been successful in courting technical professionals trained and educated abroad to return to establish entrepreneurial ventures there (Saxenian, 2006).

China does have some challenges in following India's lead in services with respect to cultural and soft skill oriented towards the US export market. China has roughly 10 million English language speakers (Gott, 2007), yet these language skills are generally insufficient to meet the expectations of US based customers. Students graduating from the top schools, however, tend to have proficient English language skills and continuing state investments in building English language capability mean that China English language capability will continue to improve. However, the country has already achieved success in providing technical and engineering services to Japan and Korea, which it has a closer cultural affinity with, and these markets could offer China significant future opportunities in upgrading potential. Korean is one of the non-Chinese languages widely spoken in the northeast part of the country (U.S. Department of State, 2010). The shared script between Chinese and Japanese mean that Chinese learn Japanese more easily than other languages. China is relatively

underdeveloped in services, although complementary services, such as remote engineering services and manufacturing design services, can be linked to its robust manufacturing sector. Labor costs are comparable to India's, where it is still possible to find a BPO employee for US \$5000 per year (Manimala, 2008; Vedala, 2007).

The Philippines has created an educated labor force with good English skills. It is strong in lower value-ITES, especially voice services, which command 70 percent of the country's ITES revenue, with medical and legal transcription a sizeable second. The country's strength in services can be an advantage relative to other labor markets, when trying to move up into higher value services. The country's biggest shortcoming, however, is the lack of a strong technical skill base, which will take significant time and large investments to build relative to other Asian labor markets. The higher educational system produces 2.3 million students, 10 percent of which are from technical fields, from 1600 institutions (Kennedy & Sharma, 2009). Salaries are slightly higher than India and China. An entry level call center employee costs roughly \$5,457 a year, while a team lead earns an average of \$9,153 (Kennedy & Sharma, 2009).

ii. Eastern Europe & Russia

The USSR's long history of investments in technical education provides Russia and other Eastern European countries a strong technical base in IT and R&D capabilities. While Russia has 1,100 higher educational institutions and over 160,000 technical workers in science, math, and engineering, and expertise in research and development (Kennedy & Sharma, 2009; Vedala, 2007), the country suffers from poor government support and a lack of constructive ties between government and industry. Brain drain and lack of conducive of environment for industry operations also makes enticing foreign trained and educated professionals back to Russia difficult. Russia's service orientation

has been weak, and oriented toward IT, rather than the BPO sector, which is undeveloped, although opportunities to move into high-value non-voice related processes exist given its technical expertise. The country lacks strong English skills or cultural orientation to other large export markets.

The former USSR republics in Eastern Europe are much more favorable offshore service providers than Russia. The expansion of the EU to include potential offshore service challengers, such as the Czech Republic, Poland, Romania, Hungary in 2004, and then Bulgaria in 2007 has made these lower cost destinations attractive for three reasons. First, Eastern European destinations have more cultural similarity to clients based in the European markets, including a wide range of European language skills with capabilities to serve multiple western European countries. The shared culture and languages will likely reduce errors and mistakes that are the result of miscommunication and cultural misunderstanding. Second, the integration into the EU legal framework may translate into the ability to transition professional work between countries that are traditionally blocked through credentialing and laws. Third, travel between Western Europe and Eastern Europe requires only a short flight relative to those required to get to other offshore delivery locations, such as India.

Despite relatively high technical skills and the attractiveness of close cultural proximity to European markets, Eastern European countries suffer from higher labor costs and in ability to scale. Labor costs in Eastern European countries are low relative to Europe, but they are nearly double the labor costs for comparable skilled labor in India and China, making these destinations relatively unattractive outside of Europe, although the recent European economic crisis has pushed down currency valuations, which makes

this labor cheaper. The Czech Republic produces 100,000 graduates, 22,000 of whom are engineers or IT graduates and the country has a strong and growing presence in both IT and BPO services, and has adequate infrastructure (Vedala, 2007). Romania is one of the strongest regional players in terms of technical education, ranking 13th in the world in terms of IT graduates, with about 62,000 employed in IT (Vedala, 2007). Its strength in IT could help bolster upgrading in the nascent ITES service industry. Poland produces 400,000, technical and non-technical graduates a year. The country's high level capabilities in the ITES industry are demonstrated by its overwhelming concentration in R&D (35 percent) and finance and accounting (24 percent) (Kennedy & Sharma, 2009).

iii. Latin America

Mexico and Chile are the two strongest Latin American challengers to India's lead in ITES. Mexico's proximity to the US and its language competence in both Spanish and English has made it a growing destination for Spanish and English voice services in the US, yet the country lacks the technical skill base and the state-society relations that proved effective in the Indian case. Chile has an emerging niche IT and ITES service market, buoyed by a supportive state. The country has about 65,000 students, with around 12,000 studying engineering and science. The industry has created a strong niche in R&D and analytics services that is upgraded in part from state mining taxes (Kennedy & Sharma, 2009; Peterson, Gott, & King, 2011). Both Mexico and Chile have English language capability.

Brazil has a large overall labor pool, although the technical labor pool is weaker than India's and the workers tend to have weaker English language skills relative to India. The industry is heavily concentrated in IT and the ITES sector has grown slowly. The country produces a total of 420,000 graduates each year, with 55,000 of them

graduating from engineering and science fields (Kennedy & Sharma, 2009). The Brazilian government's designation of IT and ITES as a strategic industry in 2000 has translated into strong government support of industry, further strengthening a history of government partnerships with private sector. Brazil has an active trade association, the Brazilian Association of Information Technology and Communication Companies (BRASSCOM) that was founded in 2004 that could serve as a source of industry advantage. The Brazilian association was modeled on India's business association, NASSCOM, which hosted visiting Brazilian industry officials, shared their organizational approach to industry promotion in India and approach to interaction with the government (personal interview, executive, NASSCOM, 7/10/06). The country has approximately 10 million English language speakers, much less than the 90 million India has (Gott, 2007). The government and industry are providing opportunities for expanded English instruction but the country's lack of capability in English and Spanish hurts its opportunities to export service work outside the country. Salaries in the IT and ITES industries in Brazil are 50 percent higher than those in India.

iv. Africa

South Africa is the strongest challenger in the Africa region and with a large English language speaking population, now has hundreds of contact centers serving clients in Europe and the US, which could provide a sufficient base to help the country move from lower value into higher value services. Yet, significant challenges facing the country is further developing the technical skill base, which is small scale and requires further state directed effort to increase the numbers in the technical labor pool. The country has 21 universities and 15 "technikons"(Kennedy & Sharma, 2009), but educational reform is badly needed to improve educational quality and output, which is

exacerbated by a large gap in student enrollment between white and non-white students. Labor costs are relatively high, with the average salary in the IT industry estimated at \$31,957 (Kennedy & Sharma, 2009).

In conclusion, trade associations and firms emerged as the central developmental actors driving industry development in IT enabled services, with the state playing an increasingly supporting role. Upgrading occurred through a number of association and firm level mechanisms that built technical and cultural skills over time. At the industry level, trade associations assumed more proactive developmental roles in its interaction with the government to gain recognition for the industry, lobby for tax breaks and deregulation of telecommunications, and finally drafted industry plans in educational reform and the development of new industrial hub cities. Firms also played a developmental role through significant investments in training in both technical and “cultural” skills. Organizations obtained industry knowledge through two key mechanisms. One was knowledge transfer and learning within client relationships, while the second was through the migration of technical labor educated and trained abroad. This interaction of multiple institutional actors in the development of the ITES industry demonstrate that rather than a withering away of the state, development requires the state’s continued involvement, in partnership with other agents in civil society. The arrangements of these relationships constitute a new step in Indian development and in the service development more generally.

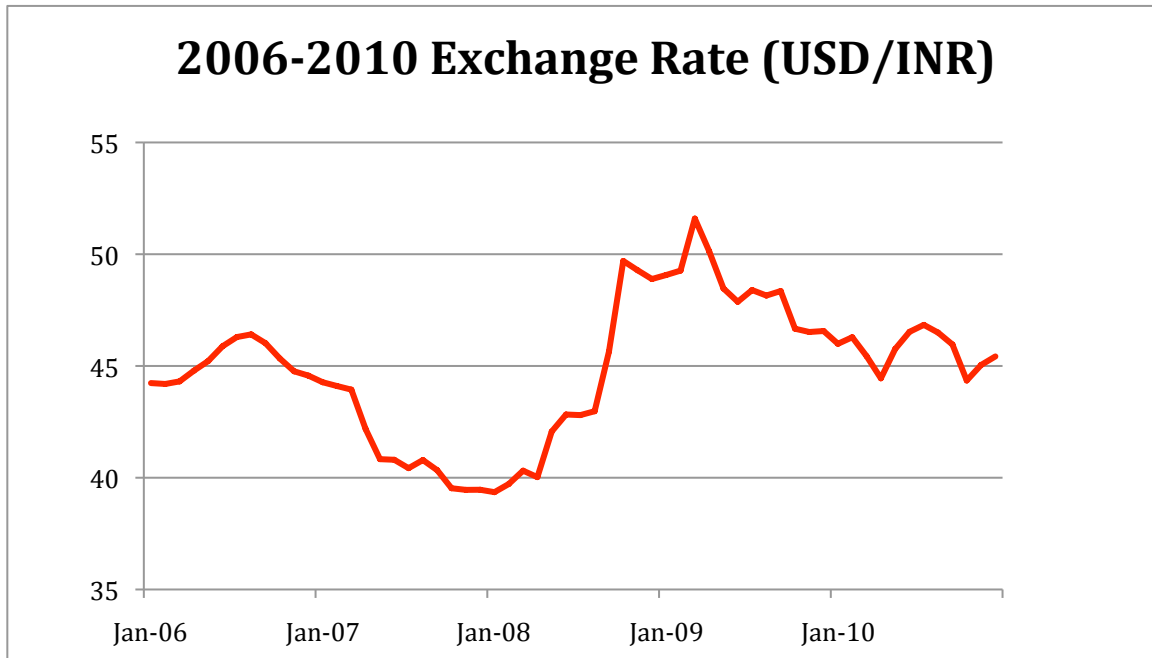


Table 7.1: Dollar to Rupee Currency Exchange January 2006-December 2010

Source: (OANDA Corporation, 2011)

Appendix

Image 1: India - basic country level data



Population:

1.13bn (mid-2007)

Largest Cities: Population in millions, 2001 census

Mumbai (Bombay): 16.4

Kolkata (Calcutta): 13.2

Delhi: 12.8

Chennai (Madras): 6.4

Bangalore: 5.7

Hyderabad: 5.5

Source: (Business India Intelligence, 2011)



Image 2: Infosys campus

Pictures of sprawling IT and ITES campuses became ubiquitous in the media in early 2000s and are emblematic of “Shining India.” This photo is of the Infosys Campus in the software industrial park, Electronic City, which sits on 43 acres that are walled off from the rest of the city, houses 50 separate office building where over 20,000 employees work. Other amenities offered at the Infosys Electronics city campus include shops, banks, restaurants, a health club, a basketball court, a golf course, swimming pools, and a visa processing office. Photo source: (Schifferes, 2007).



Image 3: Lobby of Infosys development center

The clean lines and the reflection of lighting off of smooth surfaces in the image suggest cleanliness, efficiency, and modernization, values that software and service firms seek to promote to potential clients. Photo source: ("The lobby of Infosys development centre in Mysore," 2004).



Image 4: Infosys’s business process outsourcing center

In this photo Infosys’s glittering Business Process Outsourcing (BPO) center in Bangalore is juxtaposed with make-shift housing for the poor that have arisen next to the road bordering Electronic City’s IT industrial park. This image is atypical in that it includes symbols of “Shining India” fore grounded by scenes of poverty. Source: (Schifferes, 2007).



Image 5 (left): Call center workforce and workers.

Photo Source: (Bray, 2005)

Image 6 (right): Call center office cubicles and workers.

Photo Source: (Sharma, 2004)



Image 7: Teleradiology Solutions office

Located in Whitefield on the outskirts of Bangalore. Source: www.RadGuru.net

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