Offshoring of High-Value Functions: A Case Study of U.S.-India Trade in Medical Transcription Services

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Abstract:

The offshoring industry in the developing world is rapidly moving into a higher gear. It started with relatively low-end works such as back-office support, customer service, and data entry. In recent years, developed-world-based firms are increasingly outsourcing more sophisticated work such as computer coding, insurance underwriting, claims processing, and medical transcription to developing economies (Reich, 2005). An estimate suggested that "high-value" business process outsourcing (BPO), such as accounting, paralegal, medical, research, and banking will reach $50 billion by 2010 (Mehta *et al.*, 2006).

Keywords: offshoring | outsourcing | India | medical transcription | business process outsourcing | BPO

Chapter:

Introduction

The offshoring industry in the developing world is rapidly moving into a higher gear. It started with relatively low-end works such as back-office support, customer service, and data entry. In recent years, developed-world-based firms are increasingly outsourcing more sophisticated work such as computer coding, insurance underwriting, claims processing, and medical transcription to developing economies (Reich, 2005). An estimate suggested that "high-value" business process outsourcing (BPO), such as accounting, paralegal, medical, research, and banking will reach $50 billion by 2010 (Mehta *et al.*, 2006).

Although reflective pieces from the popular press and some academic articles have provided insights into the rapidly growing offshoring industry, there is a dearth of theoretically oriented research on the evolution of a "high-value" BPO industry in emerging economies. To improve our understanding of the development of a "high-value" BPO industry in emerging economies, this chapter focuses on the offshoring of medical transcription services by industrialized-world-

based healthcare providers to developing economies. In specific terms, we examine the US–India trade in medical transcription services.

Before proceeding, we offer some clarifying definitions. Business process outsourcing (BPO) is defined as long-term contracting of a firm's non-core business processes to an external contract provider (Romberg, 1998). These are non-IT business processes but in most cases are IT-intensive or are facilitated by IT (Kshetri, 2007). Some examples include customer service call centers, tax preparation, medical transcription, finance and accounting, human resources, design and engineering, etc. (*The Economist*, 2005a). The performance metrics are defined and measurable (Stone, 2004). In offshore BPO, the outsourcing firm and the client firm are located in different nations. High-value BPO involves offshoring of sophisticated tasks requiring high skills. Medical transcription is an ITES, which involves converting medical notes dictated by a physician into editable electronic documents to be added to patient records (Ghodeswar and Vaidyanathan, 2008; Thomson Financial News, 2007).

The degree of offshoring in an industry from a developed economy to a developing economy

Degree of labor-intensiveness and outsourceability of functions in a service industry

Cost-based as well as non-cost-based factors influence the outsourceability of a business function. Previous researchers have recognized that cost reduction has been a major motivation behind outsourcing (Allnoch, 1997; Cottrill, 1997; Gourley, 1998; Hicks *et al.*, 2000; Magretta and Dell, 1998; Power and Simon, 2004). Pressure to remain competitive has forced firms to reduce costs and emphasize on productivity by becoming lean and efficient and to focus on core businesses (Moore, 1998). Outsourcing helps firms streamline the internal processes (Avery, 2002) and conserve corporate resources for the most effective use (Morgan, 2000). For supply chain management activities, outsourcing has been a common strategy used by companies to enhance competitive advantage (Allnoch, 1997; Cottrill, 1997; Gourley, 1998; Hicks *et al.*, 2000; Magretta and Dell, 1998; Power and Simon, 2004). Fierce world competition has also forced firms to internationalize their outsourcing operations (Aquilon, 1997).

An important point to bear in mind is that cost-saving potential and hence the degree of outsourceability varies across industries (Garner and Schwartz, 2004). The degree of labor-intensiveness, an indicator of the cost saving potential, is positively related to the degree of outsourceability jobs in the industry.

Factors affecting the flow of offshoring of functions in an industry between two economies

Consider two economies – the offshoring origin country (O) (a developed country) and the offshoring destination country (D) (a developing country). A natural question is how the destination country (D) improves labor productivity and comparative factor endowments from the standpoint of the development of a high-value BPO industry. To address this question, we begin by considering Ricardian theory, which explains comparative advantage as a function of technological differences that vary across economic sectors (Xu, 1993). Ricardian models assume that only labor is used to produce goods and services. The theory predicts that a country

will export products in which its labor productivity is high relative to its labor productivity in other products (Helpman, 1999).

An important point to bear in mind, however, is that there are many functions that are labor intensive and many developing countries are endowed with labor. Prior to discussing mechanisms associated with the inflows of jobs and investments in the medical transcription industry, it is necessary to create a theoretical framework about the internationalization of an economic sector of a developing country. In a rich body of theory and empirical research, scholars have made the case that two interrelated factors – productivity and international linkages – explain the internationalization of an economic sector of a developing country.

Productivity of a function in an industry

Wages of skilled as well as unskilled labors tend to be higher in developed countries (O) than in developing countries (D). This is not because technologies in developed countries are superior but because "enough different sectors have such superiority in a portion of the activities that they encompass" (Deardorff, 2005). Outsourcing thus combines the low-wage labor of developing countries with the high technology achieved in developed countries (van Marrewijk *et al.*, 1997). From a developing country's perspective, related to explanations based on the productivity–offshoring nexus, it can be argued that productivity is positively related to the amount of offshoring of services the country receives. Deardorff (2005) notes that business activities that are more productive in developed countries than in developing countries are not likely to be outsourced unless there is a substantial cost saving. He also observes that activities that have been bundled within developed-world-based firms in a certain way but lack "superior technology" are more likely to be outsourced to developing countries.

More generally, the probability of a function being offshored to a developing country increases in proportion to the developing country's increase in productivity in the function. In prior literature researchers have compared offshoring with the osmosis process (Kshetri and Williamson, 2004). According to the Osmosis Model of offshoring, the above processes lead to an increased "osmotic pressure" of offshoring in the industry between the two economies (Kshetri and Williamson, 2004). This leads to a higher rate of offshoring of the function from (O) to (D).

International linkages

For developing-country-based firms, success in offshoring is about developing and simplifying linkages with partners (Levy, 2005). "Relational proximity" or degree of linkages between the two economies in a particular industry plays an important role in the knowledge flows needed for the outsourcing of functions related to the industry (Coenen *et al.*, 2004). Previous researchers have noted the important role of learning by exporting in developing channels of international linkages (Bigsten *et al.*, 2002; Castellani, 2001; Clerides *et al.*, 1998; Girma *et al.*, 2003; Kraay, 1997; Yasar and Morrison Paul, 2007). Exporting also helps enhance productivity by augmenting inputs, such as labor force and managerial skills, as well as by exposing firms to cutting-edge technology from their partners (Nelson and Phelps, 1966; Yasar and Morrison Paul, 2007).

Factors associated with productivity and international linkages in the medical transcription industry

A developing economy's ability to attract jobs related to offshoring of high-value functions such as medical transcriptions depends on "the construction and protection of unique assets and capabilities" (Levy, 2005). This is especially important as services often need to be tailored to the requirements of the buyer. A supplier's capability to provide different varieties is thus crucial to success (van Marrewijk *et al.*, 1997). The development of assets and capabilities and other inputs required in the offshoring of medical transcriptions is associated with, and facilitated by, the development of related economic sectors (Yasar and Morrison Paul, 2007). To put things in context, the knowledge of medical terminology and the ability to dictate medical and health-related reports is crucial for the development of the medical transcription industry (Buban, 2007). In the US, employers prefer to hire medical transcriptionsts (MTs) with at least post-secondary training in medical transcription. Knowledge of anatomy, and medical-legal issues is also necessary (Chowdhury, 2002). Up to 99.8 percent accuracy is needed in medical transcriptions (Indo-Asian News Service, 2007).

Offshoring experience, typically in a low-value BPO, is likely to enhance the productivity and international linkages required for the success of high-value BPO such as medical transcription. Consider India: the country's management style is highly traditional (Heller, 1995) and "process-driven and detail-oriented" approaches are virtually absent in the Indian work culture (Piramal, 2004). In the same vein, Indians have a more flexible approach to deadlines (Slater, 2003).

The development of the BPO industry has led to the evolution of a number of professionally run companies in India. These companies are well versed in the use of new management techniques, software, and communications systems (Quinn, 2000). In an attempt to address their clients' fear that customer data will be stolen and even sold to criminals (Lucas, 2004), a number of Indian firms have started instilling the culture of modern management. For instance, call center employees have to undergo security checks that are considered to be "undignified" (*The Economist*, 2005b). Firms have established biometric authentication controls for workers and banned cell phones, pens, paper, and internet/email access for employees (Fest, 2005). Similarly, computer terminals at some BPO companies (e.g., Mphasis) lack hard drives, email, CD-ROM drives, or other ways to store, copy, or forward data (Engardio *et al.*, 2004). Likewise, Indian outsourcing firms extensively monitor and analyze employee logs (Fest, 2005).

The normative institutions (e.g., the medical center's obligation to maintain patients' privacy in the US) and regulative institutions (e.g., a potential threat of lawsuit for failing to protect patients' information) make it extremely important to protect patients' health-related information in the US (Kshetri, 2005). In 2003, a Pakistani medical transcriber working for a US-based medical center threatened to post confidential voice files and patient records on the Internet if her pay was not increased. This incident created awareness of potential security breaches in call centers and drew closer scrutiny of medical transcription services supplied by foreign vendors (GAO, 2006).

Strength of network-based linkages

To understand developing-world-based firms' export of medical transcription services, it may be helpful to consider the network theory, which focuses on interpersonal and social relationships. According to the network perspective, internationalization is a result of interaction and the development of a multitude of relationships. Such relationships enhance the proximity of partners involved in businesses. Cuningham and Calligan (1991) argue that networking creates relationships that have the potential to benefit complementarily all parties involved and harnesses the synergistic potential of the net in pursuit of the common goal.

Bathelt (2005: 209) notes: "when firms establish production linkages in a new country, they are faced with a heterogeneous *cultural* and *institutional* environment. Firms have to bridge these differences, establish efficient communication between agents with various cultural backgrounds and adjust their organizational practices in the host country." Chun (2007) documents the emergence of the inflows of network-based IT investment from Taiwan to China starting in the late 1990s. Examining cross-border investment in Dongguan, China, others have noted that Taiwan-based firms capitalize on their social network resources, which has helped to overcome their shortage of internationalization experiences and assets (Chen and Chen, 1998; Chen, 2003). It is also suggested that a network of contacts may serve as "reputational intermediaries" (Arora and Gambardella, 2005), which increases the degree of linkages between the two economies in the industry.

A case study of US–India trade in medical transcription services

Compared to activities such as back-office transaction processing, which belong to the low end spectrum of BPO, medical transcription is considered to be a high-value BPO (Benner, 2006; McKinsey Global Institute, 2003; Reich, 2005). Note, too, that medical transcription is very complex work, which needs "specialized" knowledge and is not normally offered by "generic" BPOs (Business Wire, 2006; *The Statesman*, 2006). One estimate suggested that average revenue per employee per hour in India in the early 2000s was $15 in medical transcription compared to $7 for BPO (Express Computer, 2003a, b).

Medical transcription is information-based. Technological advances have reduced the cost and increased the feasibility of producing medical transcription services offshore. At the same time, new management techniques, software, and communications systems have enabled better coordination and made it possible to monitor quality. External contract providers, such as Spectramind, MsourcE, and First Ring are enabling American clients to monitor remotely the external contract providers' operations in India (Read, 2003).

They have also been employing sophisticated encryption technologies to communicate. Third, medical transcription is codifiable – that is, it can be reduced to a routine set of instructions that can be conducted easily offshore and requires low levels of experience or training. Beyond all that, technological advances combined with the nature of this industry provide high transparency. For instance, quality in medical transcription is easy to measure and verify.

A constellation of factors has led to a rapid rise of ITES in India. The cost of transmitting one billion bits of data from New York to Bombay in 1996 was about one ten-thousandth of that in 1976. Likewise, in the medical transcription industry, the cost of receiving audio files and

sending the corresponding transcribed electronic documents between the US and India fell by two-thirds during 1996–2000 (Chowdhury, 2002). On the policy front, in India, call centers and medical transcription centers are service-tax-exempted (Mukherjee and Gupta, 2007).

Capital cost to create a MT job in India is estimated in the $400–$750 range (Chowdhury, 2002). Medical transcription units are thus rapidly rising in India (see Table 12.1). A 2006 survey found that all large and some smaller US-based medical transcription service organizations (MTSOs) had plans to set up or build on and expand offshore centers in India (FinancialWire, 2006).

Table 12.1. A comparison of the medical transcription industry in India and the Philippines

Country	Revenues from offshore services	Employment generated by offshore services	Medical transcription revenue (year)	No. of medical transcription companies	No. of MTs
India	$12.2 billion (2003)[l]	1.28 million (2006)[t] 1.6 million (2007)[t]	US$32 million (1998)[p] US$70 million (1999)[h] US$80 million (2003)[b] US$110 million (2004)[a] US$195 million (2006)[n] Estimate: US$2.6 billion (2008)[h]	254 (2002)[i] 300 (2004)[k]	3,800 (1998)[e] 6,100 (1999)[f] 10,000 (2004)[k] 18,000 (2006)[n] 20,000 (2007)[o] Estimate:160,000 (2008)[e]
The Philippines	$1.7 billion (2003)[l] $2.1 billion (2005)[q] $5 billion (2007)	112,000 (2005)[s] 235,000 (2006)[r] 320,000 (2008)[r]	US$7 million (2005)[d] Estimate: US$110 million (2008)[m]	16 (2003)[g] 20 (2004)[c, d] 22 (October 2004)[j] 40 (December 2006)[q]	1,200 (2005)[d] 10,000 (2008)[m]

[a] Hussain (2005), [b] chennaionline.com (2003), [c] Tan (2004), [d] http://outsource2philippines.com/health.asp, [e] NASSCOM estimates, See "Future of medical transcription" at www.technicaforts.com/tp.shtml (accessed: December 11, 2005). The numbers indicate medical transcription and insurance claim processing jobs; [f] *India Today* (2001); [g] Computerworld Philippines (2002); [h] Chand (2000); [i] Calimag (2002); [j] Valdez (2004); [k] Estimate by The Hindu Businessline, www.thehindubusinessline.com/2004/08/07/stories/2004080702540300.htm; [l] Beshouri *et al.* (2005); [m] Estimate of the Medical Transcription Industry Association of the Philippines (MTIAPI) (Casiraya, 2008); [n] Business Wire, May 25, 2006; [o]*Hindustan Times*, December 3, 2007; [p] McKinsey and Co. (1999) cited in Chowdhury (2002); [q] sourcingnotes.com (2006); [r] Bacasong (2008); [s] prwebdirect.com (2006); [t] Ribeiro (2007).

India is the largest supplier of medical transcription services to the US (see Table 12.1). In 2005, India was the most popular destination country for offshore outsourcing of services involving health information for federal contractors and state medicaid agencies in the US (GAO, 2006).[1] In 2006, India accounted for 78 percent of the offshore medical transcription market (FinancialWire, 2006). Other destinations for outsourcing of medical transcription services include Ireland, Canada, the Caribbean, Pakistan, Sri Lanka, Singapore, China, Mexico, and Brazil (The Hindu Businessline, 2006; Buban, 2007).

About 80 percent of medical transcription jobs in India come from the US (Hallinan, 2006). In 2003, US–India trade medical transcription and billing was estimated at $340 million (McLean, 2006). One estimate suggests that about 47 percent of US hospitals outsourced medical transcription to India in 2006 (The Hindu Businessline, 2006).

In 2003, the global healthcare industry exceeded US$2 trillion. After experiencing several years of high growth rates, US healthcare spending[2] climbed to US$1.4 trillion in 2001 and is expected to reach US$2.2 trillion by 2007. The concept of requiring accurate medical transcription is

rapidly taking off in the US, and other countries with high-level health expenditures may realize the importance of medical transcription soon (Indiainfoline.com, 2003).

A legal factor affecting outsourcing of medical transcription is the Health Insurance Portability and Accountability Act (HIPAA) of 1996. HIPAA has created stringent regulations for the privacy of information about individuals, and the security of information systems used by healthcare professionals and organizations. In addition to satisfying HIPAA requirements, digitization and better documentation also provide a better defense for the company. According to International Data Corporation (IDC), the US is expected to spend $4.2 billion in medical transcription outsourcing in 2008 (Buban, 2007).

The US has, thus, become a major source of demand for medical-transcription- related services. Estimates suggest that the medical transcription business in the US is worth between US$10 and 25 billion annually[3] and is expected to grow at 21–35 percent per year during 2002–12 (Computerworld Philippines, 2002; Conn, 2005). These rapid growth rates are expected to boost the demand for MTs. The US Bureau of Labor Statistics predicts a 51 percent increase in demand for MTs by 2008. In the US, 47 percent of medical transcription work is outsourced while the rest is done in-house. A large proportion is outsourced to domestic firms. It is estimated that US-based MTSOs will increase their share from 40 percent in 2006 to over 50 percent of the overall demand by 2008 (FinancialWire, 2006). An estimate by the American Association of Medical Transcriptionists (AAMT) suggested that 4–5 percent of total US transcription is done offshore. Estimates from other sources suggest that 8–10 percent of US medical transcription took place abroad in 2004 (Piotrowski, 2005).

Medical transcriptionists held about 102,000 jobs in 2000 in the US. About 40 percent worked in hospitals and another 40 percent in physicians' offices and clinics; with the remainder in laboratories, colleges and universities, and temporary help agencies (Bureau of Labor Statistics, 2003).

Labor-intensiveness and the degree of outsourceability of medical transcription

Medical transcription has many characteristics of a job with a high degree of outsourceability. According to an Association for Computing Machinery Report, medical billing and medical transcription are among works that are often offshored. First, with regard to the degree of labor-intensiveness (Garner and Schwartz, 2004), it is important to note that medical transcription entails labor-intensive tasks (Ghodeswar and Vaidyanathan, 2008). Indeed, over 70 percent of US hospital costs are labor related (Mattoo and Rathindran, 2005). A high degree of labor-intensiveness results in a high cost-saving potential. Note, too, that medical costs have been a major national policy issue. In a survey of A.T. Kearney, 93 percent of respondents indicated cost reduction as a major motivation for offshoring. US hospitals thus realize a substantial cost saving by outsourcing to India. As in the case of other industries, US hospitals' outsourcing of medical transcriptions to developing countries has thus stemmed from their desire to cut costs (Quammen, 1996).

Some estimates suggest that cost savings by outsourcing business processes to India can amount up to 75 percent (Gupta, 2002). For instance, in India, call center weekly wages ranged from $16

to $20, which was less than 10 percent of Ireland's (Chowdhury, 2002) and about a fifth of Canada's (Kshetri and Williamson, 2004). A McKinsey study indicated that a 400-person outsourcing center in India translates into a US$20–40 million annual saving for a US corporation. For instance, the average salary of service delivery agents in India is US$2,000–3,000 per year compared to US$23,000–35,000 in the United States. Medical transcriptionists (MTs) in the US earn US$24,000–38,000 per year at the entry level and as high as US$60,000–80,000 with some experience.

A preliminary analysis indicates that production per worker in medical transcription may be higher than most traditional economic sectors in India. India's relative inefficiency in the medical transcription industry vis-à-vis the US is slightly higher than in manufacturing and much lower than in the R&D industry, as seen in Tables 12.2a and 12.2b. Combining this with India's factor endowment in the potential labor force needed for medical transcription, we can expect further growth in the outsourcing of this industry. Moreover, India is a global software leader and accounts for the lion's share of the global BP and IT outsourcing.

Table 12.2a. A comparison of manufacturing, medical transcription, and R&D industries in India and the US

	The US	India	US–India ratio
Manufacturing industry$^{\Omega}$			
GDP ($ million)	1,741,185	80,236	
Paid employment ('000)	15,356.9	6451.54	
Output per worker ($)	113,381	12,436	9.1
Output per worker (purchasing power parity [PPP], $)	113,381	63,768	1.8
Medical transcription industry			
GDP ($ million)	15,000$^{\varphi}$	110$^{\gamma}$	
Paid employment ('000)	101,000$^{\delta}$	10	
Output per worker ($)	148,500	11,000	13.5
Output per worker (purchasing power parity [PPP], $)	148,500	56,404	2.6
R&D industry$^{\Psi}$			
Researchers in R&D per million people (1990–2003)	4526	120	
Receipts of royalties and license fees ($, million 2003)	48922.72	~0	
Royalties and license fees per R&D worker ($)	36942.11	~0	→∞

Source: $^{\Omega}$ Euromonitor International, $^{\Psi}$ UNDP (2005), $^{\delta}$ US Department of Labor, cited in Conn (2005), $^{\gamma}$ Hussain (2005), $^{\varphi}$ Future MT 2003, $^{\alpha}$ Estimate by The Hindu Businessline, www.thehindubusinessline.com/2004/08/07/stories/2004080702540300.htm.

Table 12.2b. A comparison of cost of employing a Medical Transcriptionist (MT) and other selected occupations in India and the US

Occupation	India	The US	Remarks
MT	US$2,000–3,000	US$24,000–38,000 (entry level) US$60,000–80,000 (some experience)	
Chip design engineer^{a}	US$30,000	US$300,000	The figures include salary, benefits, equipment, office space and other infrastructures.

^{a} Ernst (2005).

The shift in the labor market in the US medical transcription industry powerfully illustrates the declining attractiveness of jobs in the country in this industry. An estimate by the US Department of Labor suggests that the US healthcare industry will need 90,000 additional medical records

professionals by 2012 (Lillis, 2004; Oliva, 2006). The fall in the supply of US transcribers and the growth of the medical transcription market has further increased "osmotic pressure" of offshoring of medical transcription services from the US to India (Kshetri and Williamson, 2004). This has clearly enhanced the attractiveness of using transcribers in developing countries such as India. High costs and manpower constraints in the US have triggered the growth of offshoring of medical transcription (FinancialWire, 2006).

India's success in lower-value BPOs and its impact on the offshoring of medical transcription

The revenue generated by ITES jumped from US$224 million in 1998 (Chand, 2000) to US$1.5 billion in 2002 (The Hindu Businessline, 2002). An estimate of the National Association of Software and Service Companies (NASSCOM) suggested that India's software and services exports crossed US$7 billion in the fiscal year 2004–05, representing 44 percent of the world market for such services (Cady, 2005). Indian IT industry's revenue grew to $47.8 billion in 2006–07 (Indo-Asian News Service, 2007). In the fiscal year 2004–05 alone, ITES added an estimated 150,000 jobs in India (The Hindu Businessline, 2005). This industry was estimated to employ 1.6 million people in early 2007 (Ribeiro, 2007).

India is a global power in the software sector as well as in ITES. One estimate suggests that India has captured two-thirds of the global market for offshored IT services and about half of the global market for offshored BPO (Chakrabarty *et al.*, 2006). India thus seems to have a high level of factor endowments needed for medical transcription services. This industry only needs graduates who have the ability to listen to, read, and write English with reasonable comprehension abilities.

While medical transcriptionists in the US attend three to four months of training, in India, they require about six months of full-time training (Chowdhury, 2002). They are also familiarized with specialized medical vocabulary and language. What is more, firms in developing countries are taking several measures to maintain the quality of services (Iwinski, 2004). First, whereas US MTs typically have high-school-level education, most Indian MTs have college degrees, often with training in medical sciences. Second, Indian MTs are provided with on-the-job training "to decipher American medical jargon" (Quammen, 1996). Medical transcription firms in India run three shifts a day and employ MTs with various skill levels such as general transcriptionists, proofreaders, and "super-proofers" (Chowdhury, 2002).

Firms in the offshoring sector seem to make efforts to improve the work ethic of the workforce. To take an example, in India, turning up at work on time is not considered to be important and Indians have a more flexible approach to deadlines (Slater, 2003; *The Economist*, 2006). Indian companies provide training on the Western approach to time and other concepts related to culture. For instance, OfficeTiger, an Indian outsourcing firm, explains to its employees that "five minutes really means five minutes" (Slater, 2003). Unlike in the traditional economy, in the offshoring sector, employees cannot skip work for religious or family functions (Kalita, 2005).

The offshoring experiences of Indian firms have helped the development of the medical transcription industry. Note, too, that medical transcription has more stringent requirements regarding service quality compared to other outsourced businesses such as call centers. Such

requirements often include a turnaround time of eight hours (two hours for emergency "stat" procedures) and imposition of stiff penalties if the accuracy and time factor clauses are not met (Dev, 2001). Likewise, Indian firms have also employed sophisticated encryption technologies in communication processes.

In sum, Indian firms in the medical transcription industry have been able to build unique assets and capabilities (Levy, 2005) required for the development of this industry. As noted above, these are especially important for services (van Marrewijk *et al.*, 1997).

Economic sectors related to medical transcription in India and the impact on the inflow of medical transcription-related jobs to India

India's economic sectors related to medical transcription are also developing rapidly. Telemedical technology has already allowed India to capture 2 percent of the US healthcare market (McLean, 2006). For instance, in 2005, India's world-class medical centers attracted 120,000 overseas patients, mainly from industrialized countries, and the number is rising at 30 percent annually. One estimate suggests that the clinical research outsourcing market in India will exceed $10 billion by 2010.

Looking at the medical transcription industry in the US and India, it is apparent that this industry is more attractive relative to other sectors in India. It is important to note that an MT in the US earns 80 percent as much as the median production worker (Chowdhury, 2002). Entry-level salaries in call centers, which reached about Rs. 10,000 ($230) a month in 2005, are much higher than most other jobs (*The Economist*, 2005b). Since medical transcription is a high-value BPO4 (Benner, 2006; McKinsey Global Institute, 2003; Reich, 2005), complex work, and requiring highly trained and skilled employees (Indo-Asian News Service, 2006; *The Statesman*, 2006), MTs are likely to be paid higher salaries than most call center employees.

The strength of network-based linkages between India and the US in the medical industry

In India, while there are some large MTSOs (e.g., CBay, Spheris, Spryance, Acusis, and Heartland), a large proportion of MTSOs are mid-sized (<500 employees) and smaller players (<50 employees). Mid-sized MTSOs tend to work as franchisees or vendors of larger players and have limited marketing presence in the West. Smaller players, on the other hand, are mainly subcontractors to large and midsized MTSOs. The large players account for about 70 percent of Indian medical transcription offshoring revenues (Business Wire, 2006).

Previous researchers have noted that especially managers of SMEs extensively rely on networks at the early phase of the internationalization process (Lindqvist, 1997; Spence and Crick, 2006). Thus network theory is of special interest to explain the US–India trade in medical transcription services, especially for mid-sized and smaller MTSOs. Business and personal networks have provided Indian medical transcription firms with various competitive advantages in the form of social capital.

In 1992, non-resident Indian physicians established one of the first MTSOs in the US to capitalize on offshore labor for medical transcription (Chowdhury, 2002). Indeed, social

networks created in Silicon Valley have been an important factor in the geographic diversification of the internationalization of the Indian IT industry to other destinations such as Taiwan (Saxenian, 2002).

Various networks associated with physicians of Indian origin working in the industrialized world have created relationships that are harnessing synergistic potential (Cuningham and Calligan, 1991). Among foreign-born physicians practicing in the US and the UK, the highest proportion is from India. Indian physicians accounted for 4.9 percent and 10.9 percent of the workforce in the US and the UK respectively. The number of Indian doctors practicing in the US was estimated at 50,000 in 2002 (Chowdhury, 2002). These doctors have created a network of contacts for India-based medical transcription services and served as "reputational intermediaries" (Arora and Gambardella, 2005). One MT can transcribe between one and two doctors' dictations (Chowdhury, 2002). On that basis it is estimated that US-based physicians of Indian origin alone could support about 30,000 Indian MTs.

Indian medical transcription has benefited from networks of various shapes and sizes. For instance, Mahabharat (2001) reports that an elderly couple in India learned to use the Internet to keep in touch with their son in the US. Their correspondence turned into a business venture of transcribing medical records in Hyderabad, a South Indian city.

A number of US-based healthcare BPOs have also established operations in India (see Box 12.1). For instance, Healthscribe India, which started its operations at Bangalore in 1992, is a fully owned subsidiary of US-based Healthscribe, Inc. Similarly, Ohio-based Heartland Information Service (HIS), in association with Indian partners, has expanded its services to five centers across South Asia, employing 3,000 people by 2002.

Discussion, conclusion, and implications

This chapter provided insights into the cost-based and non-cost-based drivers of outsourcing a high-value BPO from a developed economy to a developing economy. In addition to low costs, non-cost-based factors such as the improved work ethic of the Indian workforce, network-based linkages, and positive externalities created by other economic sectors have been key drivers of the offshoring of medical transcription services in India.

This chapter provided important evidence about the significance of networks in the internationalization process. In addition, our findings indicated that the development of assets and capabilities related to new economic sectors such as offshoring are associated with and facilitated by the development of related economic sectors (e.g., ITES).

Based on the above analysis, we can draw a number of conclusions. First, ICT infrastructures needed for outsourcing require much less investment compared to leading capital-intensive industries of the past such as steel, chemicals, and heavy machinery (Steinmueller, 2001). As noted above, Indian medical transcription firms are employing state-of-the-art technologies and the fact that many of them have been established by US-based firms indicates that the technologies used in transcription in India and the US are essentially on par. The development patterns of the Indian medical and offshoring industries indicate that India may attract higher

skilled medical functions in the future. The Indian offshoring industry is shifting its focus from BPO to knowledge-process outsourcing (KPO).[5]

Second, as noted above, one reason medical transcription is being outsourced to India is because of a high degree of labor intensiveness. The increasing sophistication of speech recognition and spelling and grammar checking software, however, offers stronger future capital-for-labor factor substitution prospects in medical transcription services. Different phases of medical transcription services, however, differ in terms of the elasticity of substitution of labor with respect to capital – *raw transcription* having the highest elasticity and *editing* the lowest (Table 12.3). Declining labor intensiveness – due to voice recognition technology, for instance – of medical transcription services is, thus, likely to erode the strategic positioning of developing countries as determined by the factor endowment structure. Countries such as India and the Philippines may have to shift to greater automation and greater levels of skill training to retain and reinforce their comparative advantages. Projections by analysts of the offshore BPO market indicate a slippage in India's comparative advantage and thus its share of IT enabled services, fueled by increasing competition from other low-wage countries as well as increasing automation and rising wages in India (Ribeiro, 2004).

Table 12.3. Phases of the medical transcription process and their factor substitution prospects

Medical transcription phase	Explanation	Factor profile	Factor substitution prospects
Raw transcription	Medical records transcribed from audio to text format	Currently labor and skill intensive, offering advantages to selected developing nations	Automation likely, as speech recognition improves (IBM, 2002)
Proofreading	Checking for and rectifying spelling mistakes and grammatical errors	Currently labor and skill intensive, offering advantages to selected developing nations	Partial automation likely, as spelling and grammar checking software improves
Editing	Checking the text for inaccurate medical terminologies or other inconsistencies	Currently labor and skill intensive, offering advantages to selected developing nations	Likely to remain labor and skill intensive, offering advantages to nations with skilled editing workforce

Source: Based on Sudhindra (2003) and IBM (2002).

Finally, Ricardian theories predict further growth in the export of medical transcription services from India. Using the Ricardian approach, "relative inefficiency" (Xu, 1993) is relatively low for the Indian medical transcription industry. As Table 12.2a indicates, compared to the US, relative inefficiency of the Indian medical transcription industry is slightly higher than the manufacturing industry and much lower than the R&D industry. Medical transcription services are, however, characterized by a higher degree of outsourceability than manufacturing.

Box 12.1: CBay's Healthcare BPO venture

CBay Systems is an Annapolis-US based Healthcare BPO Company established in 1998 (*Health & Medicine Week*, 2004). In the same year, it formed CBay India, a fully owned Indian subsidiary (Business India Intelligence, 2000). CBay India's headquarters are located in Mumbai and had over thirty centers across India as of early 2006.[6] In 2005, the company was recognized by Anne Arundel Tech Council as Tech Company of the year for being the largest global provider of medical transcription services in the US (*The Washington Post*, 2005).

As of early 2006, CBay had 650 clients in the US (The Hindu Businessline, 2006). The company's revenue grew from about $15 million in 2002 (Fiske, 2003) to about $50 million in 2005 (The Hindu Businessline, 2006). The company outsources 95 percent of its projects to its Indian centers (Hallinan, 2006; The Hindu Businessline, 2004).

CBay employed about 4,500 medical professionals in early 2006 and plans to increase the number to about 10,000 by 2008 (The Hindu Businessline, 2006). The firm employed about 130 MT professionals in the US in 2003 (Fiske, 2003). CBay has its own team of trainers that includes doctors, senior medical transcriptionists, and English-language trainers. As of 2000, there were seventy trainers in India (Business India Intelligence, 2000).[7]

CBay handles about a million documents a day (The Hindu Businessline, 2006). The company uses encryption and compression in its communications via the Internet (Business India Intelligence, 2000). All production centers have closed local area networks and the computers have no disk drives. Only people who have signed confidentiality agreement have access to a document (Fiske, 2003). In 2007, CBay was developing a new technology-enabled service – CbayPraxis, which in a single desktop application, brings together a variety of management technology offerings and combines them with transcription, electronic medical records, ePrescription and billing services (PR Newswire, 2007).

CBay (India) identifies potential entrepreneurs with managerial capability to set up and finance production centers (Business India Intelligence, 2000). This model is markedly different from its competitors who directly employ their MTs. For instance, in 2004, CBay acquired Godrej Remote Services and renamed Godrej's medical transcription (MT) outfit as CBay Remote Services (CRSL) (Kulkarni, 2004). In the same year, it acquired Emergency Dictation Software Systems of Hyderabad (The Hindu Businessline, 2004). It also formed a strategic alliance with iLIANT Corporation, a leading provider of software, business outsourcing, and consulting services for physician practices (The Hindu, 2004).

High telecommunications costs in India and inadequate bandwidth remained a major bottleneck in the early years of its operations (Business India Intelligence, 2000). Nonetheless, India has overcome these problems in recent years.

Notes

1. India was followed by Ghana, Mexico, Canada, Jamaica, Bermuda, and the Philippines.

2. Health spending per capita in the US was $4,631 in 2000, 44 percent higher than Switzerland's (the country with the next-highest expenditure per capita), 83 percent higher than neighboring Canada; and 134 percent higher than the OECD median (Anderson *et al.* 2003).

3. The estimates of the size of the US medical transcription industry vary widely. One source estimates it at US$15 billion with an annual growth of 15% – 20% in 2003 (Future MT, 2003). Another source estimates it at US$20 billion (www.zeelearn.com/course/medical/html/objectives 1.htm).

4. Some other examples of higher value-added work include radiology, software development, portfolio analysis and risk management, and even complex R&D functions (Benner, 2006; McKinsey Global Institute, 2003).

5. *The New Zealand Herald*, May 19, 2007, "Outsourcing craze sees Indian firms take over jobs in finance, law, and health."

6. See http://in.jobstreet.com/jobs/2006/2/default/20/719748.htm.

7. Also see "CBay and medical transcription: Business India Intelligence – March 2000: dictating to Delhi" at //www.cbayscribe.com/cbaysystems/releases mar2000.htm.

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