

## Research Article

# “Lift and Shift”: Moving the Back Office to India

### Abstract

*The recent growth in offshoring business processes is driven by the need for cost savings, but, because of the potential for both the quantity and quality of work that may be done overseas, has larger implications for the service economy in developed countries. This paper uses India as a case study to examine the business, knowledge-related, and technological considerations that drive the globalization of business process fulfillment. It also examines the industrial structure that is emerging in India for the work and draws conclusions about its future and its implications for service workers in developed countries.*

### Introduction

Today, the physical products we consume are the result of a value chain in which much of the manufacturing is undertaken offshore (Feenstra 1998; Gereffi 1994; Porter 1990). During the last three decades the operating assumption has been that this loss of manufacturing is natural as we increasingly become a service economy. Though usually not explicitly articulated, sanguine observers implicitly assumed that services would remain in the developed nations with their more highly educated workforces, superior telecommunications and transportation infrastructures, and more transparent government and regulatory regimes.<sup>1</sup> This with only minor exceptions characterized the global geography of work before the early 1990s.

The world of services is most complicated because it contains such a wide variety of activities. Many services such as hairstyling, coaching, and house painting, to name only a few of what Reich (1991) terms *in-person services*, are place based. There are several other services, such as data entry, accounting, and claims processing, to provide some illustrations, that are not as place based. For these less rooted services, there may be very good reasons they are located close to their actual generation, but under the correct conditions these reasons might become less binding. For example, transportation or communications barriers may exist in terms of either cost or security. The information necessary to carry out the service may be embedded in physical materials that cannot be efficiently or securely relocated. That is not to say that no services have been offshored.

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*1. For an early discussion of the movement of the United States to a service economy, see Bell (1973). For concern about the loss of manufacturing, see Cohen and Zysman (1987).*

Already in the 1980s some English-speaking Caribbean nations were undertaking airline ticket and credit card processing (Pearson 1993; Posthuma 1987) for various multinational corporations (MNCs). In the 1980s airlines began flying ticket stubs to Ireland or India for processing (Warf 1995). Still, the number of overseas employees in these operations has been small, and for an economy the size the United States, the effect has been minimal. Not surprising, given the massive movement of manufacturing jobs offshore, these small operations have attracted little attention.

In the 1990s, the pace of service offshoring accelerated. One major beneficiary of this was Ireland, which became a haven for US software MNCs that were able to take advantage of Irish tax breaks and its well-trained, inexpensive workforce to provide call center services and software indigenization for the European market (O'Riain 2004). Contemporaneously, in India a contract software programming industry servicing MNCs especially in the United States and the United Kingdom emerged (A. Arora and Athreye 2002; D'Costa 2003). These developments indicated that services could also be undertaken offshore. In the last half of the 1990s, a few MNCs began experimenting with relocating business processes (BPs), that is, components of back-office services, such as payroll and order fulfillment, and some front-office services, such as customer care, to English-speaking, developing nations, especially India, but also other nations such as the Philippines.

Besides India, many nations including Malaysia, the Philippines, China, the English-speaking Caribbean, and Ireland are courting MNCs with the hope of attracting these BP operations. However, the Indian BP operations already employ more than all the others combined. Each of these other nations has disadvantages compared with India. For example, in Malaysia, the Philippines, and the Caribbean, the labor forces are too small. In China, English language remains a difficulty. Only the Philippines appears to be a strong competitor, and it has a reputation for being politically unstable. For this reason, this paper discusses only India.

In recent months the popular press has been full of stories about how white-collar jobs in the United States are at risk of being transferred overseas. For example, Engardio, Bernstein, and Kripalani (2003) had a front-page cover in *Business Week* asking the question "Is Your Job Next?," which intimated that

the entire white-collar class was at risk. The other news media have chimed in with similar articles, even as liberals have denounced this new "hollowing out" of the US economy. There is, naturally, much concern about the implications of moving BPs to India. There is, however, little substantive information on the industry with the exception of consultant reports and newspaper articles. This article aims to provide some baseline facts about the industry and provide a descriptive analysis of the current industrial structure of the Indian BP industry.

The paper begins with a discussion of our research methodology and how we collected data. Because there is little written on this industry except newspaper articles and consultants' reports, we used personal interviews as the main data-gathering technique. The next section explains what BP offshoring is and examines the technical and business enabling conditions that made the phenomenon not only possible but also attractive to MNCs. We also identify the six factors that firms exploring offshoring BPs consider before making such a decision. The third section discusses the drivers of the decision to locate BPs in India. In the fourth section the industrial structure of the BP industry in India is examined and seven organizational forms are found to be coexisting at the present time. Then, in the discussion section we draw some tentative conclusions about the future of the industry in India and its implications for service workers in the developed countries.

## Data Collection and Methodology

This study reports on exploratory research that the authors conducted at business process operations in Mumbai, New Delhi, and Bangalore in March and April 2003. The sample of 46 firms comes from a total population of approximately 200 BP firms in India. We asked the two Indian organizations most responsible for the IT sector, the Science and Technology Parks of India and NASSCOM, to choose a representative sample for us. However, we deliberately oversampled on the larger, more significant firms. We conducted interviews with 46 firms that together account for 40% of the total offshore BP employment in India (see Table 1). We interviewed representative firms in each of the six firm categories identified in our research. Though we concentrated on the largest firms, we also visited

Table 1. Sample Firm Size

A	B	C	D = B/C	E = B/A	F
No. of firms interviewed	Employment in sampled firms	Total industry employment	Sample % of industry employment	Average employees per firm	Median employees per firm
42	69,729	171,500	40.7	1,660	1,000

operations as small as 100 employees. Hence, we believe that the firms we interviewed are representative of the Indian BP offshoring industry.

The interviewees were executives, usually vice presidents with various functional titles, and in fewer cases, the CEOs or chairpersons. The interviews were invariably at least 1 hour in length and often up to 2 hours. In 70% of the cases, there was a tour of the facilities, though because of the time difference with the United States, the facilities usually had minimal activity. All interviews were taped and transcribed. Unfortunately, because of the political and commercial sensitivity of business process offshoring the respondents requested anonymity.

In addition to the interviews, we reviewed the literature on BP offshoring and outsourcing. This literature falls in two realms: consultant reports and the popular press. The consultant reports can be valuable but frequently suffer from their desire to create business for themselves. The press reports are useful for providing topical materials, especially in following investments and expansions. However, except for these two sources of written material, there is little other material on the topic.

## Explaining BP Offshoring and the Enabling Conditions for Globalization

*Business processes* is the catchall term used for the myriad white-collar processes that any bureaucratic entity undertakes in servicing its employees, vendors, and customers.<sup>2</sup> These include human resources, accounting, auditing, customer care, telemarketing, tax preparation, claims processing, document management, and many other chores

necessary for firm functioning. Invariably, the completion of a BP is the result of an entire chain of separate activities.

Until the early 1990s, business processes were generally treated as a fixed cost and received minimal management attention. The interest in reengineering awakened management attention to the savings that could be achieved by reorganizing these processes (Hammer 1990; Hammer and Champy 1993; Davenport 1993; Cole 1994). One part counseled the decomposition, examination, and standardization of the activities necessary to complete a process. This was often accompanied by a digitization of at least some portions of the entire process. The reengineering exercise made each activity in a process more visible, and often certain activities were modularized, thereby permitting detailed consideration of the most cost-effective way of completing each activity and making it possible to separate them spatially and organizationally should the need arise.<sup>3</sup>

This reengineering was combined with the increasing digitization of the objects of service work that was ongoing throughout the 1990s. Digitization was so important because it removed the physical medium carrying the information, thus freeing it from the constraints of size and weight (Kenney 1997; Curry 1997). Still, few service operations can be done only on the computer (the modern form of mundane work in the terminology of Callaghan, Thompson, and Warhurst [2001]). They usually require some level of face-to-face interactivity, either among coworkers or with persons outside the organizations, such as vendors and clients. However, information technology (IT) and

2. We define a business process as a complete service, such as handling a customer complaint, processing a medical claim, or processing a purchase order. Completing a process requires undertaking a set of activities. For example, in handling a customer complaint it is necessary to understand the complaint, classify it, decide on a course of action, undertake the action, and follow up to ensure the action solved the complaint. Each of these is an activity that is potentially separable from the others.

3. On modularity, see, for example, Baldwin and Clark (2000) and Sturgeon (2002).

reengineering permitted processes to be parsed into components requiring different levels of skill and interactivity. This made it more feasible to relocate those activities requiring low levels of face-to-face interactivity offshore. Orlikowski (1996) captures this phenomenon in her study of technical help desks where digitization induces work flows to be reorganized in the direction of dividing work flow into tasks that are separable in terms of technical skills and interactivity. These developments had significant implications for the possibility of offshoring, even in the absence of cost arbitrage opportunities that are available when work is outsourced to developing nations such as India.

The initial relocation of BPs was intranational. For example, call centers were relocated from high-cost cities to lower-cost small towns and then to rural locations. The earlier efforts to lower wage costs for back-office BPs saw firms move their back-office operations to smaller Midwestern towns where accents were neutral, education was adequate, and labor costs were lower and (at that time) relatively reliable. The cost savings were likely in the 20% to 30% range when the low-cost land and labor costs were totaled. However, labor pools were shallow, thus limiting the scale of operations.

From this perspective, the relocation of such work to other countries was an extension of this process as firms sought to cut costs further. There were technical developments that facilitated relocation. One of the most important was the continuous cost reduction in data transmission. These technical developments loosened the geographical constraints that encouraged the undertaking of BPs nationally. Reducing the physical and technical constraints meant that variables such as factor costs and skill availability increasingly became the determinants of where service activities were undertaken.

In choosing which processes to undertake offshore, it may be thought that the simplest processes would tend to be offshored first because the skills for undertaking more complex processes might take a longer time to learn. Most existing forms of globalization are not processual and thus do not consider the evolution of the overseas facility; however, as Kogut and Zander (1992), among others, hypothesize, overseas operations also experience learning, even if it is simply catch-up. From the perspective of the source nation, the initial transfer may be only the first stage in the absorption of an entire chain of

activities. For example, in insurance claims processing, whereas initially the Indian operation might simply process the claim, it might be possible to transfer some of the investigation and valuation activities to the Indian operation. With experience Indian accountants or engineers may be trained to determine fraud or exaggeration of claims or, at the least, flag unusual claims.

There are several additional dimensions to the offshoring decisions, other than the complexity of tasks and the need for face-to-face interaction. Some of these are internal to the firm and some are part of the environment. It may happen—as we have noticed in India—that highly technical, complex tasks in customer support that require interaction between, say, a corporate client in the United States and the vendor's technician, may be more easily offshored than a simpler task requiring interaction with a retail customer. This is because the latter requires a kind of interactive skill that might be weaker in India compared with the former, whereas India offers technical skills of high quality capable of handling the former task.

We identify the following six internal factors that firms consider before offshoring an activity, in addition to environmental factors such as technological enablers and the savings in direct labor costs (which we consider later):

- The knowledge component of the activity. A higher knowledge component makes the firm more concerned about whether the quality of the service will change because of a locational change and greater difficulty in the transfer process. There may be reasons to worry about quality slippage if the remote location cannot understand the quality or qualities needed or (even if it understands) cannot match the quality needed. Sometimes, if quality is acceptable, a firm may not only shift to a remote location but may also outsource the activity to mitigate the possible political difficulties of an internal transfer. A firm also might be concerned about a loss of competencies in a certain location that would be costly (or even impossible) to re-acquire in the same location if ever needed. If unique skills atrophy, any disruption of access could have dire consequences.
- The interactive components of the process. There are two dimensions of interactivity that

affect the location of BPs: (1) interaction with other persons in the production of the service, and (2) interaction with the (client's) customer and other vendors. The greater the need to interact with other persons within the firm and the greater the interaction across different services and processes, the higher the cost and risk threshold of offshoring portions of the work. Of course, it might be possible to off-shore the entire process, thus retaining interactivity at the new location. But if some activities cannot be offshored, offshoring the others might not be feasible. In cases where offshoring and outsourcing were both being considered, the risks might be even greater. For certain firms, customer interaction is a core skill. If they believe offshoring could disrupt such interaction, they are unlikely to take the risk.

- The level of separability of the process. In certain kinds of work, such as customer care, the entire process can be offshored because it does not require personal interaction. These activities usually are routinized and even scripted. For example, much software support is provided through scripted decision trees. For less scripted activities, offshoring may be less feasible. Consider a process within which 70% of the work is Web or database research and 30% is interacting directly with clients. Unless it is possible to separate these processes into activities, it will be impossible to transfer the process. Separability is not dichotomous but rather a matter of degrees. It may be possible to reengineer a process to make it more separable, though this may be at the cost of some level of service.
  - Savings from concentrating an activity in one location. Often firms will have several offices performing the same function. This is often the case because as firms expand they often tap out local labor pools and therefore establish offices in other regions. This can result in an inefficient spatial posture. Often in developed countries it is too expensive to concentrate these facilities in a single location. However, the firm relocating to India can overcome this sunk-cost issue. The advantages of concentration may be significant.
- There are benefits of size due to scaling up operations. For example, a larger facility is more capable of operating overload. A larger facility requires a smaller excess cushion to manage a peak load, thereby creating both a manpower and facility savings. Of course, there may also be diseconomies of size. The advantage of concentration can also favor outsourcing because a service provider can pool the business of many clients. The classic example is medical transcription, which is still mainly outsourced to small local firms or even individuals in the United States. The large firms in India can offer guarantees of quality that smaller domestic operations cannot offer because they have large labor pools, thus reducing the effects of absenteeism and offering the typical efficiencies that Adam Smith ([1776] 2003) points out regarding even a simple division of labor.
- Reengineering as part of the transfer process. To transfer a business process, it is necessary to study it intensively and script the transfer. In the process of study, often there will be steps of the current process that can be discarded, consolidated, or simplified. These are legacies of earlier methodologies that were changed as the production process evolved. During the transfer these are easier to abandon than at an existing facility where they have become a natural component of the daily routine. There are other less expected benefits that can arise from the transfer process that go beyond the efficiency effects. These actions of examining and transferring a process can yield significant efficiencies. Processes often evolve in a path-dependent manner, and as Arthur (1994) and David (1986) show, path-dependent outcomes may not be the most efficient configuration vehicle. During the transfer process, these inefficiencies can be addressed without disrupting work patterns. The workers in the new location are met with a *fait accompli*.
  - The time-sensitive nature of the work. Some work such as payroll has deadlines. Indian operations can shorten various product cycles. The most obvious of these is work that needs to be completed overnight in Europe or the United States that can be undertaken during

the day in India. For example, technical calls by high-end clients may need to be answered within 15 minutes. For medical transcription, doctors notes for patients in intensive care might have turnarounds as short as 2 hours. Indian operations are able to undertake these high-priority tasks because they can afford more slack resources to meet peak loads than their Western counterparts can. This dimension of quality is far more expensive to offer in developed nations where labor is more costly.

## Drivers of the Indian Business

The combination of low labor costs, project management skills, and technological sophistication make India a particularly attractive candidate for BP offshoring.<sup>4</sup> The genesis of the relocation of business processes to India can be traced to the mid-1980s when India emerged as an offshore site for software production. By the late 1990s India had become a leading supplier of contract software programming because of its combination of skilled, low-cost manpower and project management skills.

Labor cost differentials are not the only difference. In the United States, call centers have been relocated to low-labor-cost areas, which are most often rural areas. There they are limited by labor shortages, high attrition rates, and relatively poor educational levels. In contrast, Indian cities such as Mumbai or Bangalore offer access to enormous labor pools of potential employees and have the complementary urban services that permit the establishment of operations employing thousands. The call centers in India we visited varied in size, but the median was 1,000 employees (see Table 1). The average size in the United States is under 400, and many are between 150 and 300 employees.

The key benefits for foreign firms to operate in India are cost and labor supply. According to an Indian trade group, NASSCOM-McKinsey (2003), BP offshoring employment for overseas customers was 171,500 as of March 2003, compared with 106,500 in March 2002.<sup>5</sup> Revenue generated for the financial

year ending March 2003 was estimated at \$2.375 billion compared with \$1.475 billion in the previous year. This implies that revenue per employee was \$13,848 in 2002–2003, unchanged from the previous year.

According to the NASSCOM estimates, direct costs per employee are \$10,354 (or \$5.20 per billable hour, of which \$3.10 is the estimated labor cost), yielding a 33.7% return on the direct cost of each employee seat. Comparably, direct costs in the United States are estimated by NASSCOM at \$55,598 per employee (or \$27.80 per billable hour, of which \$21.50 is the estimated labor cost).<sup>6</sup> Clearly, the cost pressure to shift the business overseas, especially during the current economic downturn, must be great.

Because the median size of firm is 1,000 persons (see Table 1) with typical fixed-cost investment of \$7,500 per seat, the annual return on capital is 46.6% and average gross profit (which is tax exempt under current law) is about \$3.5 million. One Fortune 500 firm that consolidated several fulfillment operations to Bangalore reported to us that the overall cost savings were 80%.<sup>7</sup> These represent significant dollar savings. The NASSCOM-McKinsey report (2003) finds that General Electric, one of the pioneers of outsourcing service operations to India, had achieved an annual savings of \$340 million per year from its Indian operations, now 7 years old. Even if these numbers are inflated, the savings are remarkable and accrue directly to the firm's profitability.<sup>8</sup>

The NASSCOM-McKinsey (2003) report estimates are that the Information Technology Enabled Services (ITES) operations will employ between 900,000 and 1,000,000 people in 2008. This assumes a compound rate of growth of approximately 45% per year for the next 5 years, an assumption yet to be validated. This is possible because India has the labor pool, the enabling technologies exist and are improving, and the pressure on firms in developed nations to lower costs is great. If the current trajectory continues, offshoring may prove to be of great significance to nations and regions that could expe-

4. For an early discussion of the role of India in BP offshoring, see Aron and Singh (2002).

5. Data for this section draw on NASSCOM-McKinsey (2003), pp. 56–71.

6. Note that this shows that infrastructure costs are lower in India. This was probably always true for most infrastructure, though the plummeting cost of data communications (PCs, software, and telecommunications) to global levels is a recent outcome of reform as is the low cost of finance.

7. Personal interview by authors, April 2003.

8. The authors' interviews appear to validate the savings potential.

rience substantial job losses as service jobs are relocated.

The firms that have most aggressively offshored work to India have been in the health care, banking, and insurance sectors. The BPs have been medical transcription, call centers, accounting, and claims processing. The initial activities have been highly routinized and resemble the initial phase of software outsourcing, where during the first phase of outsourcing, the work consisted of highly specified and routine coding operations.<sup>9</sup> More complex processes such as preparation of receivables statements and managing collections have also proven to be amenable to transfer. The next phase may take several directions. First, processes linking the organization with customers or suppliers or supporting production processes may be amenable to remote fulfillment. For example, one firm reported that after beginning with answering calls from potential clients for loan services, they went on to prequalifying loans before transferring them to loan officers located in the United States. Another firm had moved from medical transcription to coding the transcribed work into a billable event. Also, supply chain management and customer care are possible candidates. In health care, clinical trials, gene testing, and algorithm development might be offshored. Second, as BP outsourcing providers develop expertise through working for several clients, they may be able to move upstream and provide advice on business process reengineering.

The longer term drivers of the business in India have been the large-scale reform in the communications infrastructure (Dossani 2002) and, to an extent, venture capital (Dossani and Kenney 2002). Beginning in 1999, India reformed its public monopoly telecommunications system into a market-driven system through allowing a large number of private providers to enter the business. The private providers were allowed to choose their specializations, ranging from providing niche services, such as backbone and network management, to full-service integrated voice and data operations. The result has been the provisioning of a telecommunications net-

work with quality and cost levels approaching that of developed countries, though mainly in the larger cities.

Also in 1999 venture capital rules were changed to allow foreign venture capital to invest in Indian start-ups on terms similar to those available in developing countries. This has led to the availability of financial support for a number of independent firms providing BP offshoring services (see the following discussion of the industry structure).

India faces two key challenges in maintaining the pace of growth, although these are not likely to have a short-term impact. The first is a shortage of managerial talent. Such talent is needed for several activities, many of which are new to India. The first is managing the migration of a business process from an overseas firm to the Indian operations. The larger and apparently more successful firms reported that it often took up to a year to make such a transfer for some of the more complex back-office operations, whereas the simpler operations, such as outbound call centers, could be transferred within a month. The second managerial task is to maintain a seamless relationship between the transferred entity and the operations in the developed country. The third managerial task is raising and then maintaining the productivity of operator-level staff. Although some firms, notably MNCs, were achieving productivity rates that matched or even exceeded those of their developed country counterparts, this appears to be a greater problem for independent firms. This has also been greatly exacerbated by high staff turnover levels.<sup>10</sup> Although it is claimed that turnover rates are lower than in developed countries, which can be in excess of 100%, some Indian providers reported attrition rates of 7% per month, although 3.5% per month was the average rate reported in our interviews.

The second key challenge for India-based firms is the shortage of domain (sectoral) expertise, especially in the fastest-growing BP offshoring industries: finance, insurance, real estate, health care, and logistics.<sup>11</sup> Given that India has only recently liberalized its foreign investment regulations,

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9. For example, much of Y2K rectification work consisted of searching for and expanding date fields from two to four digits in the source code.

10. Developed countries also have high turnover rates, probably because of the relatively low wage rate and high stress levels. In India, our interviewees indicated that they viewed the work as part of their long-term career goals but were willing to move for small changes in the wage rate. Hence, we hypothesize that high turnover rates in India are due to rapid growth.

11. According to the Outsourcing Institute ([www.outsourcing.com](http://www.outsourcing.com)) these are high-growth areas in the United States.

Indian expertise (outside the long-established banking sector) is outdated. Other skills are also in short supply. According to the Outsourcing Institute ([www.outsourcing.com](http://www.outsourcing.com)), horizontal (service area) expertise is most needed for BP offshoring in payroll, customer care, document management, and benefits management. Apart from accounting skills, India has little experience in these segments.

## Industrial Structure of BP Offshoring in India

The number, size, and diversity of organizations offshoring BPs is great. The two important dimensions for categorizing these firms are whether the firm is Indian-owned and -operated or a multinational, or whether it is a captive or firm that undertakes outsourced work. Because the potential market is so large, and the economics so compelling, there have been a plethora of entrants from a large variety of backgrounds (see Table 2). Because BP offshoring to India is only in its earliest stages, it is difficult to predict which organizational forms will become dominant. Moreover, it is not clear whether there will be a single BP offshoring industry and whether the captives or independents will dominate, or even compete. There are niche areas such as medical transcription, Geographic Information Systems (GIS) data entry, and document conversion that may remain separate from the industry's mainstream. The following general overview is not exhaustive but does examine the types of greatest significance.

As was the case in IT, MNC captives led the way in establishing the first BP offshoring operations in India. They are still considered the market leaders because of the in-house capabilities that they have developed and the sophistication of work undertaken. However, in terms of employment IT outsourcing, where domestic firms soon became dominant, in BP offshoring, it is less clear whether the Indian industry domestic firms will be dominant. In chronological order, the MNCs entered the market first, followed by the Indian specialists that entered in the late 1990s. It is far more difficult to establish the entrance dates for the myriad other firms. Finally, the most recent entrants are MNC outsourcers such as Accenture, Convergys, and Sykes.

## MNC Captives

The MNC captives include the oldest BP operations in India, and their number has increased rapidly. The earliest BP operations were established by MNCs having existing operations in India. The first back-office BP operation in India was established by American Express in 1993. In 1996, British Airways established a back-office operation in India. This was followed in 1998 by General Electric. Today, General Electric is the largest BP employer with more than 12,000 persons in its operations and intends to increase to 20,000 by the middle of 2004. Since 2000, an increasing number of Global Fortune 500 firms, including AOL, Citigroup, Dell, Hewlett Packard, HSBC, and JP Morgan Chase, have established operations.

Even as MNCs with existing Indian operations draw on them to establish BP units, MNCs that previously had no Indian operations are establishing BP operations. These include a major US PC firm and a large online Internet service provider (ISP). The newcomers are also rapidly expanding their operations. For example, in June 2001, a PC maker launched its Indian call center operations with 200 employees. By April 2003, it had grown to a total of 3,200 employees in the original facility and at a newly opened facility in another Indian city. The operations included not only a call center but also other activities including software development. The growth of the ISP was similarly dramatic. Operations commenced in July 2002 and already by April 2003 had grown to 1,500 employees and were expected to grow to 2,000 by the end of July 2003. The compelling savings are difficult for the newcomers to resist, despite initial difficulties in managing rapid growth in a new operating environment.

Because the captives are internal operations, they have significant advantages. First and foremost, because they are internal operations they have guaranteed markets for their services; that is, they have the advantages of hierarchy. Their business volume is a hierarchical decision and the information driving the decision is excellent. In the case of lower-value-added routinized work, the advantages of captives may not be great because the decision may be almost solely on price—risk may be minimal. In the case of higher-value-added processes, management may choose to retain them in a captive operation. Not surprising, the initial BPs transferred were



Table 2. Firms Involved in Business Process Activity Offshoring to India

	<b>Typical</b>	<b>MNC/Indian</b>	<b>Outsourced (Y/N)</b>	<b>Current Size</b>
MNC captives (India experience)	GE, AMEX, Citi, HSBC, HP	MNC	N	M/L
MNC captives (no experience)	Dell, AOL	MNC	N	M
MNC outsourcers	Sykes, Sitel, Convergys	MNC	Y	S/M
MNC specialists: medical transcription, GIS	Heartland, Techdata, Kampsax India	MNC	Y	S
Indian independents	Daksh, Infowavz, Epicentre	Indian	Y	VS/S/M
Indian specialists	Kale, Thomson	Indian	Y	S
Indian captive (IT industry)	Progeon, Wipro Spectramind, HCL BP outsourcing	Indian	Y	S/M
Indian captive (non-IT industry)	Zenta, Jindal Transworld	Indian	Y	S

Note: Large (L)  $\geq 5,000$ ; medium (M) = 2,000–5,000; small (S) = 750–2,000; very small (VS)  $\leq 750$ . MNC = multinational corporation; GE = General Electric; AMEX = American Express; Citi = Citigroup; HP = Hewlett Packard; GIS = Geographic Information Systems.

at the low end of the value addition spectrum. However, this need not be the end state for the Indian operation. As both the Indian operation learns and the firm becomes more comfortable with its Indian operations, higher-value-added activities almost certainly will be transferred. For example, General Electric's Indian operation has moved up the value-added chain and added employees doing actuarial support, data modeling, and portfolio risk management. On its health care insurance operations, it employs 40 medical doctors to evaluate and classify medical claims. This suggests that larger MNCs will ultimately prefer to undertake BPs in captive units, especially for work that requires interaction among global employees. However, call center work, which tends to be a self-sufficient process with limited interaction among global employees, could well continue to be outsourced.

Relocating back-office activities to India is complicated technically; however, the organizational issues can be even more problematic. Consider the unit that is surrendering the process, though it is under intense pressure to cut costs. There is at a minimum a perception of increased risk as it becomes dependent on an Indian counterpart that is not under its di-

rect supervision. This unease may be heightened for mission-critical activities. Also, the contributing unit often must cope with redundancies or a managerial perception that it is losing power in the wider organization. The recipient unit must alleviate these concerns during the transfer process.

Operating a captive in the Indian environment requires significant managerial talent. For those with established Indian operations this is available internally. The new MNC entrants might experience significant learning costs. One difficulty they face is whether to staff the operation with expatriate executives or to hire Indians. Nearly all of the new entrants choose to send some expatriates despite the expense. For these firms, the expense of maintaining an expatriate may become an issue; however, at present, the savings are sufficiently large so as to offset the expense.

Another type of rationalization can be a part of creating a multinational center of excellence. Frequently, an MNC's various BP operations are nationally based and were developed in different historical eras; thus, there are varying practices for identical functions. Enforcing standard operating practices in different national environments can be difficult be-

cause there is a constant tendency to “go native.” This drift is endemic in even the best firms and may be most pronounced in the less intensively managed parts of the national unit’s operations such as the back offices. The transfer of these processes to a specialist organization dedicated to managing them not only creates economies of scope and expertise but also provides an opportunity for standardization and the removal of the process from the national drift. Although this relocation may be resisted at the national level, for global headquarters this may be seen as a way of improving monitoring.

There is naturally concomitant risk with the centralization of particular process practices at one global center. The most significant of these is that the global operation will lose touch with the national environment. Here, the quality of communication and trust with the national operation is critical.

The final advantage is that in the future, the captives could offer their services on the open market as merchant service providers. This would transform the captive from a cost center into a profit center. Already, a few of the largest captive BP operations are considering offering services to external customers. This could become significant in the future when the number of activities being transferred from the parent firm decreases. In 2003, the number of internal activities available for transfer is so great that securing outside customers may not yet be justified. The opportunity to exploit the capabilities being built in India as a profit center may become significant in the future.

In 2003 the captives were the largest sector of the BP industry in India. There is every reason to expect this will continue for the foreseeable future. The advantages of retaining a captive are significant in terms of reducing risk and possible knowledge leakage, capturing profits internally, and using internal operations to benchmark outsourcing contracts. Because less than 10% of the Global Fortune 1000 firms currently operate in India, it seems likely that more firms will relocate activities and that the existing operations will continue to expand.

### **Multinational Outsourcers**

BP outsourcing has a long history and has grown rapidly during the last decade. Estimates of the total size of the BP outsourcing market vary widely. For example, different consulting firms have predicted

the global market to grow to \$140 billion by 2008, \$544 billion by 2004, and even \$1.2 trillion by 2006 (Deloitte Research 2003). The lack of consistency is remarkable. The divergence in estimates is perhaps because definitions differ and because business service outsourcers are a polyglot category including data systems outsourcers such as EDS and IBM; payroll and accounting processors such as ADP; call center and customer relationship managers such as Convergys, Sitel, and Sykes; large consultancy firms such as Accenture; and many others.

For the outsourcing firms, globalization is not new when the entire business space is considered. Even before the emergence of India as an offshore location, these outsourcers had been opening service production facilities offshore in the Caribbean, Latin America, and, particularly, Canada. Beginning in about 2000 some began operations in the Philippines.

The international outsourcers established their Indian operations in 2001 or later as a response to competition from the MNC captives and the Indian independents. However, the MNC outsourcers have long-established customers and enormous domain knowledge, making them formidable entrants in India from where they can service their existing clients using low-cost Indian labor. These capabilities and existing customers have permitted them to scale up their Indian operations extremely rapidly. For example, in late 2001 a leading MNC opened its first Indian operation in New Delhi. By April 2003 this facility had more than 3,000 employees, and it was building a second facility in Bangalore that was slated to grow to 3,000 employees. The expansion of their Indian operations is not constrained by a lack of customers, though the further growth of their Indian operations may lead to the scaling back or closure of North American units. Establishing Indian operations provides for substantial cost savings and serves as protection from incursion into their customer base by the Indian firms.

The ability to transfer customers to their Indian operations while providing backup in the United States and other locations allows service-level guarantees that firms operating only in India cannot provide. The conundrum for the MNC outsourcers may be how long their customers will support higher-cost US facilities. Already, there have been closures and layoffs. In the short run, it may be cost effective

to continue operation of their US facilities, but unless the facilities can be transitioned to activities that require spatial proximity, their future may be in doubt. For example, in February 2003 Sykes (2003) announced the closure of its facilities in the United States and in Europe, eliminating 1,800 excess seats, while its Indian subsidiary was expected to grow to 1,200 seats by the end of 2003.

The MNC outsourcers have significant strengths, the most important of which is their close customer relationships. Having multiple locations provides the redundancy that some customers require. However, being headquartered in the US (or in some developed country) their overhead may be higher than that of their Indian competitors. Also, managing in the Indian environment may prove difficult. What is certain is that MNC outsourcers will have to transfer more operations offshore to remain cost competitive.

### ***MNC Specialists***

India is also attracting smaller MNCs that perform labor-intensive specialty services. These services are wide ranging but are based on specialized domain expertise. Though many of these are not really BPs, they are included under the broader category of ITES. Examples of this type of work include medical transcription, map digitization, cartoon animation, document entry and conversion, and other labor-intensive tasks. In general, these businesses are involved in digitizing analog materials or converting information from one format or media to another, for example, taking aerial photographs and entering them into a mapping program. Their sheer diversity is remarkable.

Taken individually, these activities have limited employment potential; however, in aggregate they may be of much greater significance. For example, there are approximately 270,000 medical transcriptionists scattered around the United States. Small local firms or even individuals undertake most transcription. Recently, there has been an effort to rationalize transcription; however, there are few technical economies of scale so this has advanced haltingly. The rationalization process might be facilitated if the activity could be done offshore at lower cost. One difficulty is that not only are the transcriptionists decentralized but so is the market—making sales and marketing difficult. Thus, it is not clear whether a significant portion of the total medical transcription

ultimately will be transferred offshore, despite the possible savings. What is important is to understand that these niches offer opportunities.

Another labor-intensive activity that is being relocated to India is map digitization. Today, firms and governments around the world are digitizing maps that were previously on paper. Digital maps are superior because they are easier to update, maintain, and analyze. The problem is that converting these paper maps must be done by hand, a time-consuming process. Moreover, conversion requires both attention to detail and skill; without low-cost labor, it would be difficult for most organizations to afford digitization. Given the volume of maps to be digitized, and in the future the necessity of updating them, this could be a significant niche.

The variety of niches within which businesses could be built is remarkable. Still other possibilities include legal research using Lexis-Nexis, drawing of tables and figures, drawing or digitizing blueprints, and so on. Transcription, paper-based document digitization, database-centric research, and many more activities exist in the pores of many US organizations and the economy as a whole. One drawback is that in terms of the total market size many niches may be too small to justify transfer to India. And yet, the cost pressures on these specialty firms are encouraging examination of the feasibility of offshoring their more mundane work. There are numerous other niches that might be attracted to the low-cost Indian environment.

The MNC specialists are a fascinating group because of their sheer diversity and the likelihood that their decisions will be largely unnoticed because of each niche's relative insignificance. However, their aggregate importance could be great because of the sheer number of niches that exist. If these myriad entities begin transferring activities and processes overseas, in total it could have an important impact.

### ***Indian Specialists***

Indian specialty firms are also entering fields such as medical transcription, map digitization, and manuscript preparation. The difficulty the Indian entrants encounter is their relative lack of domain knowledge. For Indian firms with deep enough domain expertise to create offerings, it may be possible for the Indian firm to transform its sales proposition from offering simple labor-cost arbitrage to provid-

ing significant value addition. For example, a publishing firm that initially only prepared drawings for chemistry texts now offers a full range of back-office services, including copyediting, formatting, and technical support. The enhanced capability allows not only the addition of greater value but also provides greater bargaining capacity.

An example of such capability development is the Mumbai firm, Kale Consultants, which specializes in providing services to the airline industry. Originally, Kale offered specialized airline software packages; however, in 2000 it extended its offering to include BPs. Coupling of specialized proprietary software tools with BP outsourcing operations meant it could offer a more comprehensive package. For customers, this created an incentive to use Kale and in the meantime created a more permanent or sticky relationship (personal interview 2003).

Developing domain expertise and becoming a specialist are difficult, and they have risks because the firm becomes dependent on a single industry or activity. And yet, they also offer the potential to occupy niches that may not be drawn into the extremely ferocious competition in highly commoditized sectors.

### **Indian Independents**

A large number of Indian-owned and operated firms have been established for the sole purpose of offering BP outsourcing services to foreign firms. A number of these are venture capital-supported and were formed during the Internet boom with the objective of providing back office services to US Internet firms. Not surprising, the collapse of the dot-coms forced these Indian service firms to rethink their strategies. Because these firms were supplying back-office work, such as answering e-mails and Web-related questions, it was not difficult to switch their service offerings toward the much larger voice sector. Still other independents were funded by venture capitalists as part of the enormous hype and excitement about BP outsourcing to India.

These independents are often dependent on a few larger customers, making them vulnerable to the termination of a contract. An important example of this is EXL Service, which was the largest Indian independent BP outsourcing firm until October 2002. At that time, 90% of its revenue (S. Arora 2002) and more than 800 of its seats were dedicated to the US insurance firm Consec. However,

in December 2002 Consec filed for bankruptcy and the employees dedicated to Consec dwindled to 175 by April 2003 (Verma 2003). Because of this, EXL Service's growth stalled while other firms surged; by mid-2003, however, EXL Service had recovered and was once again growing.

The strategic difficulties are significant. Because of the ferocious competition and the felt necessity to expand, they are under pressure to pursue many business prospects. However, this mitigates against their expressed desire to develop domain expertise. For example, the call-center-oriented firms must decide whether they want to specialize in in-bound or out-bound calling—two different skill sets. Another difficulty is that the US market is the largest in the world, but sizing a facility for the US market means that during the day in India the facility is often idle. The independents have been able to secure some business from Europe (especially England) that allows them to extend facility utilization; however, it is still difficult to use the entire facility for more than 1.5 shifts. One method for securing greater capacity utilization is to secure activities that do not require real-time processing.<sup>12</sup>

The ultimate fate of the independents is difficult to predict and for the smaller independents' survival will be precarious. Their greatest difficulty is in marketing their services to foreign firms. The larger independents should be able to strengthen their US marketing, thus increasing their market share. The middle-tier independents might be acquired either by Indian firms or multinationals wishing to enter quickly the BP outsourcing field. The strongest independents may be able to create firms that resemble the multinational independents.

### **Indian IT Industry Captives**

The Indian IT industry has grown remarkably rapidly over the last decade through the provision of outsourced programming and IT services to the global market (A. Arora and Athreye 2002; D'Costa 2003). In IT outsourcing, Indian firms such as HCL, Infosys, Satyam, TCS, and Wipro have become globally competitive. Because of their ability to use lower-cost Indian software talent, they have made significant global market share gains. Furthermore, their interaction with the global economy has contributed to the development of executive and managerial talent capable of securing overseas contracts,

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12. This section is based on interviews with Indian executives.

managing the interface with foreign customers, and migrating activities across national and firm boundaries. In the process, these firms have cultivated close connections with foreign customers for IT services. This provides an entree and confidence on the part of customers that facilitates persuading foreign customers to trust the outsourcing firms with other services.

Given the growth in ITES, the Indian IT firms believe BP outsourcing is a sector in which they can expand. Their strategic question has been how to enter this new industry. The major firms have answered this question differently. Infosys and Satyam established subsidiaries, one of which, Progeon, has grown rapidly and recently split a 5-year, \$160 million contract from British Telecom with HCL BP outsourcing. In contrast, the Satyam subsidiary has experienced only limited growth. TCS, the largest Indian software firm, entered the BP outsourcing sector through a joint venture. Finally, Wipro and HCL entered the industry through acquisitions. Wipro acquired a venture-funded Indian independent, Spectramind, which has grown quickly. HCL acquired the Northern Ireland call center subsidiary of British Telecom, though most of HCL's BP outsourcing growth has been in India.<sup>13</sup>

The Indian IT firms have significant advantages in terms of an ability to invest, linkages to customers, and various other strengths. However, the BP outsourcing business is different from IT. In terms of marketing, the customer's key decision maker is not the chief information officer or chief technical officer. Usually, BP outsourcing is sold to the various responsible divisions or departments. Furthermore, the ultimate decision rests with the chief financial officer or chief executive officer. This means that the Indian firm must operate through different channels.

The BP workforce is also different. Whereas in the IT sector the workforce largely consists of engineers, in BPs the workers' degrees are in commerce and social science. Because BP outsourcing work often requires direct interaction with customers, the workforce-salient skills are interpersonal rather than technical. Furthermore, many BPs are undertaken in real time; therefore, errors and mistakes have an immediate impact. Service-level agreements are tightly written and monitored in real time; therefore, problems are exposed nearly immediately. In software,

mistakes can be rectified later. Also, BPs that require customer interaction can be extremely stressful, putting a premium on skillful workforce management.

The ability of Indian IT firms to manage nontechnical personnel in extremely price-competitive environments will be tested. However, any test of their managerial prowess may not come until later as the rapid market growth will initially ensure an appearance of success for most entrants. Difficulties may remain hidden until growth slows, though by that time they may have built such close relationships with their customers that exit by the customers may no longer be possible because of its depth and stickiness. There is also the possibility that the technical skills within the IT parent could be used to automate aspects of the BP outsourcing process, creating another level of value addition that would improve profitability. This would also enable the IT firm subsidiaries to create advantages beyond routine labor-cost arbitrage.

### **Indian Non-IT Industry Captives**

There is a host of other established Indian firms entering the BP outsourcing industry. Attracted by the "Gold Rush" aspects of the sector, these traditional firms with their roots in the large Indian business groups have invested significant sums. Already some of them appear to be experiencing difficulties in securing customers (personal interviews 2003). However, in contrast with the smaller independents, these captives have deep pockets and can compete for as long as their parents are willing to provide subsidies. They will either find a successful strategy or they will exit the business because of an unwillingness of the parent to sustain further losses.

This genre of captives is interesting because often they have no particular advantages. In almost all cases, there are few synergies between the parent's existing businesses and the services they aim to provide. They nearly always have experienced management, though their experience may be in the relatively protected domestic market. Frequently, they have minimal experience in interacting with foreign clients, especially in terms of providing services. The lack of inherent advantages beyond deep pockets means that these captives will have to build capabilities in the same way as the Indian independents. Their only significant advantage will be the rel-

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13. In June 2003 BT announced that it was establishing a captive Indian call center.

ative deep pockets of their parent firms, though, oddly enough, this may inhibit their ability to evolve to market demands. In other words, protection from the vagaries of the market could contribute to an inability to learn from the market.

## Discussion

During the next decade the big debate about globalization will no longer concentrate on manufacturing, which is an increasingly small portion of our labor force.<sup>14</sup> The globalization of services will take manufacturing's place. The constantly falling price of bandwidth, the increasing digitization of information, and the drive to reengineer and modularize services are making it possible to lift and shift them overseas. We argue that the favored destination is India, and that at this time, the rate of growth in this transfer is significant.

The movement of business processes offshore is not new. Until the 1990s, the undertaking of business processes in developing nations existed but was minimal. This paper shows how this may be in the process of changing dramatically. We have been careful not to exaggerate the current state of BP offshoring. Most firms have been cautious in their decisions to transfer these activities (especially mission-critical functions) offshore, especially to nations such as India or the Philippines that have different social and political arrangements and sometimes problematic physical infrastructures. There are also internal risks that come from separating various activities in a process and possible resistance from developed country workforces. Finally, a botched transfer process can be traumatic to the firm's customers and employees.

If there are dangers in offshoring BPs, there is also the potential for enormous savings. In every interview and through our calculations, there is no doubt that a well-handled transfer of an activity can generate at least a 40% savings on the entire process (not just on labor costs). Table 3 presents the cost differences between operating a call center in Kansas City, Missouri in the United States and a call center in Bangalore, India. One firm claimed that their savings over a 2-year period were as high as 80% for some processes. The evidence we were permitted to see but not reproduce suggests

strongly that quality is as good as or better than that achieved in comparable US facilities.

These savings and quality claims cannot be independently verified; however, during the last 3 years the overall growth rate in employment of BP operations has been more than 50% per annum. Moreover, every MNC we interviewed was dramatically increasing the size of its Indian operations, and many said that the bottleneck was their ability to grow even more quickly. The larger Indian independents and Indian IT industry captives were growing at a similar pace. Finally, many other newcomers were building facilities or exploring India with the aim of establishing operations. This is *prima facie* evidence that there are significant economic benefits. Having said that, we are careful not to assume that this rate will continue indefinitely. We identified several factors that must be considered before concluding that a particular business process can be offshored, including the complexity of the task, the level of interactivity, its knowledge component and level of separability, the possibility of reengineering, the advantages of a single location and of scale, and the time-sensitive nature of the task. However, there seems to be an enormous opportunity for further growth when one considers that in 2002 more than 85 million Americans were in the service sector (US Bureau of Labor Statistics 2003). If only 2% of those service jobs could be transferred, this would be 1.7 million jobs, and the savings would be enormous. Our opinion is that 2% is not an unreasonable estimate.

In this study we identified seven types of BP operations in India. There is no reason to believe that only one type can survive. At the present, the MNC captives have the greatest number of employees, undertake the highest-value-added work, and are able to get the greatest usage of each of their seats. Controlling the process internally mitigates the risks that can come from outsourcing. Finally, it allows the MNC to capture all the profits of offshoring. Most MNC outsourcers should also succeed in India as they will be able to provide their developed nation customers with security, and with their global presence a guarantee of redundancy. Their greatest danger is that BP offshoring to India becomes so routinized that they will have to compete with the lower-cost Indian outsourcers directly. In general, the

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14. For a recent discussion of globalization in various manufacturing industries, see Kenney and Florida (2004).

Table 3. A Cost Comparison between Call Centers Operated in Mumbai and Kansas City, 2002

	<b>Amortized Equipment Cost (\$/hour)</b>	<b>Other Costs (\$/hour)</b>	<b>Labor (\$/hour)</b>	<b>Profit (50% mark-up in U.S., 100% in India)</b>	<b>Cost to Client (\$/hour)</b>
Kansas City	0.06	0.14	10.00	5.10	15.30
Mumbai	0.12	0.21	1.50	1.83	3.66

specialists, Indian and MNC, that have created defensible niches should also be successful. The independent Indian outsourcers will find it more difficult. There are already rumors that the smaller outsourcers, that is, those with insufficient capital, have closed their operations. The larger outsourcers that have developed good customer relations and have sufficient cash flow to support marketing operations abroad should be more successful, though some of them are likely to be acquired. The IT firm subsidiaries also may have a mixed prognosis. The larger subsidiaries that have a good and growing customer base are likely to do well through leveraging the deep pockets, contacts, and expertise of their parent firms. Finally, we believe that the subsidiaries of the Indian business groups are likely to fail. Thus, the most likely future configuration of the Indian industry will be a complicated mix of Indian firms and MNCs. Within this mix, it is likely that the MNCs will concentrate on the highest value-added operations.

Regardless of the industrial structure, it is nearly certain that in terms of its contribution to employment and value addition, the BP industry will soon overtake software. The industry also provides new career paths for Indian social science and commerce college graduates who earlier faced high unemployment rates. In contrast with software, which continues to be heavily concentrated in Bangalore and Mumbai, there is evidence that the industry is quickly diversifying its locations to the large second-tier cities. This should spread the employment benefits to a larger number of young Indians. For India, BP offshoring appears to have few detractions beyond the fact that wages may rise in the medium term.

One aspect of BP offshoring that we have not explored in detail in this paper but that is worthy of

further study is the rapidity with which it might occur. Manufacturing's movement offshore was a gradual migration that has been under way since at least the early 1960s. Though punctuated by dramatic factory closings, there was ample opportunity for the US economy to adjust.<sup>15</sup> This may not be true in services where the objects are pixels and electronic pulses that can be transmitted by photons and radio waves (Cohen, Zysman, and Delong 2000; Kenney 1997).

The impact on developed nations is more difficult to predict. In the case of the United States, even if 2% of the service jobs, or 1.7 million, were lost, the July 2003 unemployment rate of 6.2% would only rise to 7.3%. Moreover, these losses would not occur instantly but would be spread over several years. What this indicates is that the movement of service jobs will likely provide some downward pressure on wages and the employment rate but will not be dramatic. In the longer run, if it is possible to move significantly more business processes and other services overseas, it might be possible that India will do to services what China has done to manufacturing. This would be a far more fundamental shift, but it is too early to state definitively that this is the future. ■

## References

- Aron, R. and J. Singh. 2002. *The Rush to Send Back-Office Business Overseas*. Retrieved October 16, 2003, from [knowledge.wharton.upenn.edu/100902\\_ss1.html](http://knowledge.wharton.upenn.edu/100902_ss1.html).
- Arora, A. and S. Athreye. 2002. "The Software Industry and India's Economic Development." *Information Economics & Policy* 14(2):253–273.
- Arora, S. 2002, October 21. "EXL Plans to De-Risk Business Model." *Computer Express*. Retrieved

15. We are entirely cognizant of the hardships that were experienced by displaced workers, abandoned communities, and small firms unable to afford overseas operations. We are also aware that some workers, communities, and firms were unable to adjust.

- October 16, 2003, from [www.expresscomputeronline.com/archives.shtml](http://www.expresscomputeronline.com/archives.shtml).
- Arthur, W. B. 1994. *Increasing Returns and Path Dependence in the Economy*. Ann Arbor: University of Michigan Press.
- Baldwin, C. and L. Clark. 2000. *Design Rules, Volume 1: The Power of Modularity*. Cambridge, MA: MIT Press.
- Bell, D. 1973. *The Coming of Post-Industrial Society: A Venture in Social Forecasting*. New York: Basic Books.
- Callaghan, G., P. Thompson, and C. Warhurst. 2001. "Ignorant Theory and Knowledgeable Workers: Interrogating the Connections Between Knowledge, Skills and Services." *Journal of Management Studies* 38(7):923–942.
- Cohen, S. and J. Zysman. 1987. *Manufacturing Matters: The Myth of the Post-Industrial Economy*. New York: Basic Books.
- Cohen, S. S., J. Zysman, and B. J. DeLong. 2000. "Tools for Thought: What Is New and Important About the 'E-Economy?'" *Berkeley Roundtable on the International Economy*, BRIE Working paper 138.
- Cole, R. E. 1994. "Reengineering the Corporation: A Review Essay." *Quality Management Journal* (July):77–85.
- Curry, J. 1997. "The Dialectic of Knowledge-in-Production: Value Creation in Late Capitalism and the Rise of Knowledge-Centered Production." *Electronic Journal of Sociology* 2(March).
- Davenport, T. H. 1993. *Process Innovation*. Boston: Harvard Business School.
- David, P. 1986. "Clio and the Economics of QWERTY." *American Economic Review Proceedings* 75:332–337.
- D'Costa, A. P. 2003. "Uneven and Combined Development: Understanding India's Software Exports." *World Development* 31(1):211–226.
- Deloitte Research. 2003. *On the Cusp of a Revolution: How Offshoring Will Transform the Financial Services Industry*. Retrieved July 13, 2003, from [www.dc.com/Insights/research/financial/offshoring.asp](http://www.dc.com/Insights/research/financial/offshoring.asp).
- Dossani, R. 2002. *Telecommunications Reform in India*. Westport, CT: Greenwood Press.
- Dossani, R. and M. Kenney, 2002. "Creating an Environment for Venture Capital in India." *World Development* 30(2):227–253.
- Engardio, P., A. Bernstein, and M. Kripalani. 2003, February 3. "The New Global Job Shift." *Business Week*. Available at [www.businessweek.com/@5A4e1YUQZcjedhMA/magazine/content/03\\_05/b3818001.htm](http://www.businessweek.com/@5A4e1YUQZcjedhMA/magazine/content/03_05/b3818001.htm).
- Feenstra, R. C. 1998. "Integration of Trade and Disintegration of Production in the Global Economy." *Journal of Economic Perspectives* 12(4):31–50.
- Gereffi, G. 1994. "The Organization of Buyer-Driven Global Commodity Chains: How U.S. Retailers Shape Overseas Production Networks," in G. Gereffi and M. Korzeniewicz, eds., *Commodity Chains and Global Capitalism* (pp. 95–122). Westport, CT: Praeger.
- Hammer, M. 1990. "Reengineering Work: Don't Automate, Obliterate." *Harvard Business Review* (July–August):104–112.
- Hammer, M. and J. Champy. 1993. *Reengineering the Corporation: A Manifesto for Business Revolution*. New York: HarperCollins.
- Kenney, M. 1997. "Value Creation in the Late 20th Century: The Rise of the Knowledge Worker," in J. Davis, T. Hirshl, and M. Stack, eds., *Cutting Edge: Technology, Information, Capitalism and Social Revolution* (pp. 87–102). London: Verso.
- Kenney, M. and R. Florida, eds. 2004. *Locating Global Advantage*. Stanford, CA: Stanford University Press.
- Kogut, B. and U. Zander. 1992. "Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology." *Organization Science*, 3:383–397.
- NASSCOM-McKinsey. 2003. *NASSCOM-McKinsey Report 2002*. New Delhi: NASSCOM.
- O'Riain, S. 2004. *The Politics of High Tech Growth: Developmental Network States in the Global Economy*. Cambridge, UK: Cambridge University Press.



- Orlikowski, W. J. 1996. "Improvising Organizational Transformation Over Time: A Situated Change Perspective." *Information Systems Research*, 7(1):63–92.
- The Outsourcing Institute. 2003. Retrieved July 15, 2003, from [www.outsourcing.com](http://www.outsourcing.com).
- Pearson, R. 1993. "Gender and New Technology in the Caribbean," in J. Momsen, ed., *Women and Change in the Caribbean* (pp. 287–295). Bloomington, IN: Indiana University Press.
- Porter, M. E. 1990. *The Competitive Advantage of Nations*. New York: Free Press.
- Posthuma, A. 1987. "The Internationalization of Clerical Work: A Study of Offshore Work Services in the Caribbean," Occasional Paper Science Policy Research Unit, University of Sussex, Brighton.
- Reich, R. 1991. *The Work of Nations*. New York: Knopf.
- Smith, A. 2003. *Wealth of Nations*. New York: Bantam. [Originally published 1776].
- Sturgeon, T. J. 2002. "Modular Production Networks: A New American Model of Industrial Organization." *Industrial and Corporate Change* 11:451–496.
- Sykes Enterprises. 2003. *Sykes Enterprises, Incorporated Reports Fourth Quarter and Full Year 2002 Financial Results*. Retrieved August 22, 2003, from [www.corporate-ir.net/ireye/ir\\_site.zhtml?ticker?SYKE&script=410&layout=-6&item\\_id=380769](http://www.corporate-ir.net/ireye/ir_site.zhtml?ticker?SYKE&script=410&layout=-6&item_id=380769).
- US Bureau of Labor Statistics. 2003. Retrieved on August 2, 2003, from <ftp://ftp.bls.gov/pub/suppl/empisit.ceseeb1.txt>.
- Verma, P. 2003, April 17. "EXL Service to Double Staff Count," *Financial Express*. Retrieved October 16, 2003, from [www.financialexpress.com/fe\\_full\\_story.php?content\\_id=32368](http://www.financialexpress.com/fe_full_story.php?content_id=32368).
- Warf, B. 1995. "Telecommunications and the Changing Geographies of Knowledge Transmission in the Late 20th Century." *Urban Studies* 32:361–378.