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## What's Next for India

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# BEYOND THE BACK OFFICE





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In December 2006, Mumbai-based Tech Mahindra won India's biggest outsourcing deal to date — a five-year, \$1 billion contract from British Telecom to provide technical support. While the deal further underscores India's rapid ascent in global business, it also signals a transition for the world's "back office," from its current status as a provider of data processors and call-center workers to its new role in outsourcing high-end, knowledge-based skills. In this special report, experts from Wharton and Boston Consulting Group look at India's move up the service value chain through KPO, or knowledge process outsourcing, as well as its increasingly successful forays into global manufacturing, driven by the emergence of a vast domestic market and the availability of low-cost, highly skilled workers. In addition, the report looks at India's attempts to overcome the problems with power and infrastructure that have stood in the way of a sustainable GDP growth rate, as well as the key part that foreign investment and competition will play in the upgrade.

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In India, the road to better infrastructure has been bumpy so far: While sectors like telecom have boomed and transformed the business landscape seemingly overnight, others, such as energy, have been highly visible failures. According to Boston Consulting Group experts and faculty at Wharton, the failure of power sector reforms and the success of the telecom industry underscore the importance of foreign investment and competition in India's infrastructure upgrade.

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At every juncture in the Indian outsourcing industry's growth curve, its players seem to be discovering a changing array of new frontiers, beyond merely scaling up in their familiar territories. Interviews with experts from Wharton, Boston Consulting Group and outsourcing companies reveal that the industry is moving well beyond transaction-intensive services like call-center support or check processing, and now seems to have achieved critical mass in its quest for providing knowledge process outsourcing (KPO) services — where skills, judgment and discretion are the tools.

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Hampered by poor infrastructure, bureaucratic red tape and restrictive labor laws, Indian manufacturing has failed to make its presence felt globally. But that is rapidly changing, say experts from Boston Consulting Group and Wharton. More and more multinationals are setting up manufacturing operations in India, attracted by India's burgeoning domestic market and its relatively low-cost, highly skilled workforce.

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It's a surprising fact: The world's largest factory for forgings — parts for engines, axels and the like — sits not in Detroit, Tokyo or Stuttgart, but in the industrial city of Pune in western India. The factory belongs to Bharat Forge, foremost among a group of auto parts companies that are rapidly putting India on the world map for manufacturing. Yet, say experts at Boston Consulting Group and Wharton, Bharat Forge's story also illustrates the hurdles Indian industry must overcome, ranging from weak infrastructure to low labor productivity.



## A Tale of Two Sectors: What Can Indian Telecom Firms Teach the Power Industry about Reforms?

### The casual visitor to India might find

it hard to believe that it houses one of the world's hottest economies — one increasingly mentioned in the same breath as China's. In India, shabby airports, potholed roads and clogged ports remain the norm, and major cities suffer regular brownouts, especially during the summer when demand for electricity surges. The government estimates that India will need to spend \$150 billion over the next seven to eight years to bring its infrastructure up to par.

According to experts at the Boston Consulting Group (BCG), better roads, ports, power and airports could easily nudge India's annual GDP growth rate up from 7-8% in recent years to a sustainable 8-10%. (The growth rate in 2005-06 and 2006-07 to date has been more than 8%, despite all the infrastructural constraints.) "I think it's an extremely important issue," says Harsh Vardhan, a director with the Mumbai office of BCG. "The Indian economy has taken off. Better infrastructure will not only sustain this growth but accelerate it further."

The road to better infrastructure has been a mixed success so far: While sectors like telecom have boomed and transformed the business landscape seemingly overnight, others, such as energy, have been highly visible failures. According to BCG experts and faculty at the Wharton School, the failure of power sector reforms and the success of telecom underscore the importance of foreign investment and competition in India's infrastructure upgrade.

### Brownouts and Theft

Nowhere is India's weak infrastructure more obvious than in power. In cities and towns across the country, richer homes hum with the sounds of diesel generators during frequent brownouts. Poorer ones sit in darkness and silence. According to India's ministry of power, in the previous financial

year up to March 31, peak demand exceeded supply by about 10,500 megawatts, or 11.6%. In China, electricity demand in the first six months of the current year exceeded supply by 700 million kilowatt hours, according to the China Electricity Council.

Ravi Aron, senior fellow at Wharton's Mack Center for Technological Innovation, says overpriced and unreliable supply forces many Indian businesses to

According to BCG experts, better roads, ports, power and airports could easily nudge India's annual GDP growth rate up to a sustainable 8-10%.

invest in their own power generation plants. About three-fifths of Indian manufacturing is supplied by such power, compared to less than a fourth in China. "This is an additional capital investment which shows up on the balance sheet," says Aron. "Insulating yourself from India in India is an expensive business."

India's failure to modernize its power sector has not been for lack of trying. Indeed, it was meant to be one of the cornerstones of economic reforms begun in 1991. Strapped for cash, the government invited private companies — both foreign and domestic — to invest in eight so-called "fast track" projects. The most well-known of these was Enron's massive \$2.8 billion plant in Dabhol, in the western state of Maharashtra.

By the late 1990s, the fast track model had little to show for it. Most of the projects were unable to

reach financial closure. Dabhol became bogged down in allegations of corruption and overpricing, and a new government in Maharashtra refused to honor the contract entered into by its predecessor.

The failure of Dabhol was a huge setback for India's attempts to attract foreign investors to its power sector, creating the impression that India was an unstable and unreliable place to invest. Perhaps more damagingly, it politicized the domestic issue of private participation in power and tarred the reform process with the brush of corruption.

"The ghost of Dabhol still looms large," says Vardhan of BCG. "The government is incapable of making the needed investments, so you need private players. But they will invest only if they are assured returns and protection. You need to adhere to consistent

policies, and you need clarity in implementation."

"Enron told foreign players that India's democratically elected policy makers are unreliable," Aron adds. However, Arindam Bhattacharya, a director at BCG, notes that the regulatory regime in both power generation and distribution has become more stabilized in recent years, attracting more private investments.

The timing was also bad. The California power crisis of 2000 and 2001 altered the global landscape. Power shortages changed the assumption that the only growth opportunities lay in the developing world rather than in the mature markets of the United States and Europe. With alternatives to choose from, India suddenly ceased to look as appealing.

At the heart of India's power problem lie the

## Faster, Higher, Stronger: What's Next on India's Infrastructure Agenda?

Telecom and power represent the two sides of Indian infrastructure, one rapidly growing and world-class in pockets, with some of the lowest costs in the world, and the other struggling to bridge the growing supply-and-demand gap with attendant quality issues. The rest of Indian infrastructure — roads, ports and airports — reveals more of a mixed picture. For the most part, it remains far below par. In Shanghai, for example, an ultramodern magnetic levitation train whisks travelers across the 19 miles from the airport to downtown in eight minutes. In India's business capital, Mumbai, the 12-mile ride in from the airport can easily take 90 minutes along traffic-congested roads with shanties along parts of its stretches.

"It goes beyond the real impact on the economy," says Harsh Vardhan of BCG. "The impact on perceptions is also very important."

India is in the midst of the most ambitious infrastructure upgrade in its history. Workers are laying thousands of miles of asphalt; new ports and airports are springing up, often despite opposition. Joydeep Mukherji, a credit analyst with Standard and Poor's in New York, says there has been a tangible shift in attitudes. Ten years ago, he says, infrastructure

reforms were being discussed, but people weren't really sure how to go about them. Now, game plans are in place, and all that remains is execution. As with telecom, privatization along with foreign capital and expertise are key elements of the process. "Changes are happening for two reasons," says Mukherji. "The people using the infrastructure are becoming more demanding. And the people running these institutions no longer defend stupid policies with any conviction."

Wharton's Ravi Aron notes that pressures on the government's finances also act as a spur. "[India is] broke. It doesn't have money to do it," he says. "So politically unpalatable decisions have to be made, like privatization and allowing more foreign investment."

India's growth in GDP has led to record-high tax collections, which could make government financing of infrastructure projects more viable. But Aron points out that India's budget deficit, including oil and power subsidies (which are off budget items), is about 8%. "This reflects the true magnitude of the challenge of funding infrastructure," he says, adding that divestments of up to 49% of state-owned companies — called Navaratnas — would help. "Indeed a more reasonable policy would be privatiza-

tion, which would be politically very difficult given the stranglehold on power that unions have in India."

### Roads: Onto the Fast Track

India's efforts to modernize its infrastructure are most visible in an ambitious road-building project called the golden quadrilateral. The quadrilateral, a 3,635-mile four-and-six lane highway, links four of India's largest cities — Delhi, Mumbai, Calcutta and Chennai. The \$6.25 billion highway is the core of an ambitious 15-year plan to pave and widen 40,000 miles of highway. Estimated cost: \$60 billion.

The project, kick-started by the previous National Democratic Alliance government under the no-nonsense management of a former army engineer with a reputation for honesty, has done things differently from the start. Much of the construction has been subcontracted to firms from Malaysia and Korea, countries with recent road-building experience whose companies aren't squeamish about working in India with its wafer-thin margins and red tape. In several cases, they have had to overcome arcane land-acquisition procedures, politician-backed gangsters running protection rackets and irate villagers defending local

government-owned State Electricity Boards or SEBs. Afraid of angering powerful farmer lobbies, state governments tend to heavily subsidize agriculture at the expense of industry. In states such as Punjab and Andhra Pradesh, the promise of free power to farmers has been an electoral campaign staple. Thanks to political patronage, most boards are also chronically overstaffed.

Theft has played a major role, too: It's not uncommon for consumers to simply hook their homes and businesses illegally to the transmission grid, or to bribe corrupt board employees to look the other way. Between 1992 and 2002, 40% of the power generated in India was stolen. Analysts estimate that SEB losses in the financial year ending March 31, 2004, the most recent figures available, came to \$4.7 billion, or nearly 1% of GDP.

Sunila Kale, a research specialist at the University of Pennsylvania's Center for the Advanced Study of India (CASI), says politics and federalism have gotten in the way. Ironically, the very importance of electricity for day to day life makes progress more difficult. "Power reform has become such a politically contentious issue," says Kale. "It's required as much for agriculture as for industry. It's required for every kind of activity." Furthermore, says Kale, in India, unlike in China, political power is not centralized. "In China, fewer people have veto powers."

Since 1997, India has attempted to solve the problem of SEBs by following a World Bank-inspired strategy that relies on "unbundling" the generation, transmission and distribution of power. The underlying assumption: The market will deliver

shrines that fall in the highway's path. But the work has progressed, and the results are beginning to show.

"There's optimism," says Mukherji of Standard & Poor's. "This is starting from ground zero, but it is happening."

## Ports: A New Culture

Investment has been concentrated in a few economically dynamic parts of the country. India's first private port, Gujarat Pipavav in the western state of Gujarat, has now been in operation for a decade. Kandla, in the same state, is also home to a modern and efficient port. Andhra Pradesh in the south has handed over the management of two ports to the private sector. One of them, a deepwater port in Kakinada built with assistance from the Asian Development Bank, is run by Singapore's International Sea Ports. The massive government-run Jawaharlal Nehru Port Trust in Mumbai, estimated to handle nearly 65% of India's container cargo, has partially opened up to foreign investors.

"This is one instance where competition between states has worked," says Mukherji. "There's no vote bank opposing it. If you build a better port, industry will come."

Vardhan of BCG agrees that private ports

such as Pipavav are helping set a higher benchmark for the country. But he points to the long, sluggish lines of trucks outside the main port in Mumbai as evidence that much more needs to be done.

## Airports: Foreigners Welcome

In February of this year, thousands of airport workers nationwide went on strike in an attempt to foil plans to privatize India's two busiest airports: Mumbai and Delhi. In a few cases, police manned desks vacated by striking workers and passengers deplaned using step ladders.

The government has refused to back down on the privatization contracts, together worth approximately \$1.5 billion. Mumbai's airport will be upgraded and managed by a consortium that includes the Indian company GVK Industries and the Airports Company South Africa. Indian construction firm GMR Infrastructure in alliance with Fraport, which operates Frankfurt airport, captured Delhi. The first phase of their work is expected to be completed by 2010.

Facelifts for Delhi and Mumbai airports are part of a larger plan that includes new international airports for Bangalore and Hyderabad, centers of India's booming

software and call-center industries. The modernization of 30 smaller airports is also in the cards. BCG estimates that Indian airports require \$5-6 billion worth of investment over the next five years, and that total passenger traffic will rise from approximately 19 million in 2005 to 140 million in 2015.

Indeed, a broader renaissance in Indian aviation is under way. In recent years, a rash of private airlines with names like Kingfisher, SpiceJet and Deccan Air have begun to compete with state-owned airlines and relatively established private players such as Jet Airways. The government has raised the cap on foreign investment in aviation from 26% to 49%. State-owned Air India recently inked a deal with Boeing for 68 planes with a list price of \$11 billion.

Mukherji of Standard & Poor's says the sound and fury surrounding protests tends to obscure the fact that a political consensus has emerged in India that something needs to be done. "Even the Marxists say we need to modernize the airports. Earlier they would have said, 'Why do we need to fly?'" ❖

a dose of discipline. Private distribution companies have an incentive to stop theft and corruption. At the same time, an independent regulator, insulated from political pressure, would be in a better position to set tariffs to ensure that consumers were protected while companies profit.

Progress has been sluggish. State governments — loath to anger powerful farm lobbies or dismantle carefully nurtured patronage networks — have dragged their feet. In 2003, New Delhi was forced to introduce a new law that gave the federal government a greater say in the process. Kale of CASI estimates that since then, 24 out of 28 state governments have established independent regulators and 20 states have either broken up their boards or are in the process of doing so. The stabilizing policy framework is reflected in the Indian Government's recent auction of Ultra Mega Power Projects (UMPP), which has drawn a strong response from private players. Two projects have already been awarded, and the winning bidders promise highly competitive rates of power generation.

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“Insulating yourself from India in India is an expensive business,” says Ravi Aron.

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### Telecom Revolution

India's telecom sector started out with many of the same drawbacks as power. Rahul Mukherji, a visiting research fellow at the Institute of South Asian Studies at the National University of Singapore, points out that when reforms began, the telecom sector was also the exclusive domain of inefficient, government-owned monopolies. It, too, needed competition and a massive infusion of private and foreign capital to improve efficiency. When reforms began in 1991, telephones were a luxury in India — the waitlist for one could stretch for years. As late as 1995, four years into liberalization, only one in a hundred Indians had a telephone, compared to two out of a hundred in Indonesia, four in China and eight in Thailand.

Yet, though telecom reform started later than power, it has been far more successful. Between 2000 and 2005, India added about 18 million fixed phone lines and nearly 73 million mobile connections. Teledensity grew more than three-fold to 11.5%; in urban areas to 34.7%. Foreign companies such

as Singapore Telecommunications and Vodafone have poured billions into Indian telecom, as have large Indian companies such as Reliance and the Tata Group. In 2005 alone FDI announcements for the telecom sector amounted to \$2.5 billion. The telecom boom has shaken up the business landscape. Sunil Mittal of Bharti Telecom, with an estimated net worth of \$6.9 billion, is now one of the richest Indians on the planet.

What, then, made telecom so much easier to fix? Paradoxically, it benefited because phones were seen as a luxury whereas power was seen as a necessity. This meant that there was never any political pressure to set artificially low prices for phone calls. “People in India, by and large, did not think of telecommunications as a right,” says Mukherji.

Moreover, there were fewer vested interests to fight off in telecom. The large state-owned companies tried to fight reform, but they had nowhere near the political clout of state electricity boards. The government was able to set up a relatively competent and efficient regulator to balance the interests of state-owned companies, foreign and domestic private investors and consumers. While there were the usual allegations of favoritism and ad hoc policy decisions, on the whole the regulator was able to adhere to basic principles — private participation and competition.

Third, telecom policy is the exclusive domain of the federal government in New Delhi, whereas many crucial policy decisions in the power sector are made by the country's 28 states. Once the federal government was on board, there was little that state-level politicians could do to derail telecom reform. “Telecom did not affect any vote banks,” says Vardhan. “Political will was required to a limited extent, compared to power. Also, typically anything completely in the purview of the central government tends to proceed faster.”

The late 1990s also coincided with the boom of India's software industry and the first signs of the potential of outsourcing. The tremendous prestige attached to these industries gave them disproportionate clout. Prodded by industry groups such as the National Association of Software and Service Companies (Nasscom), bureaucrats and politicians in New Delhi quickly realized the potentially catastrophic consequences of unreliable and overpriced telecom on both these export-driven industries and moved to correct them.

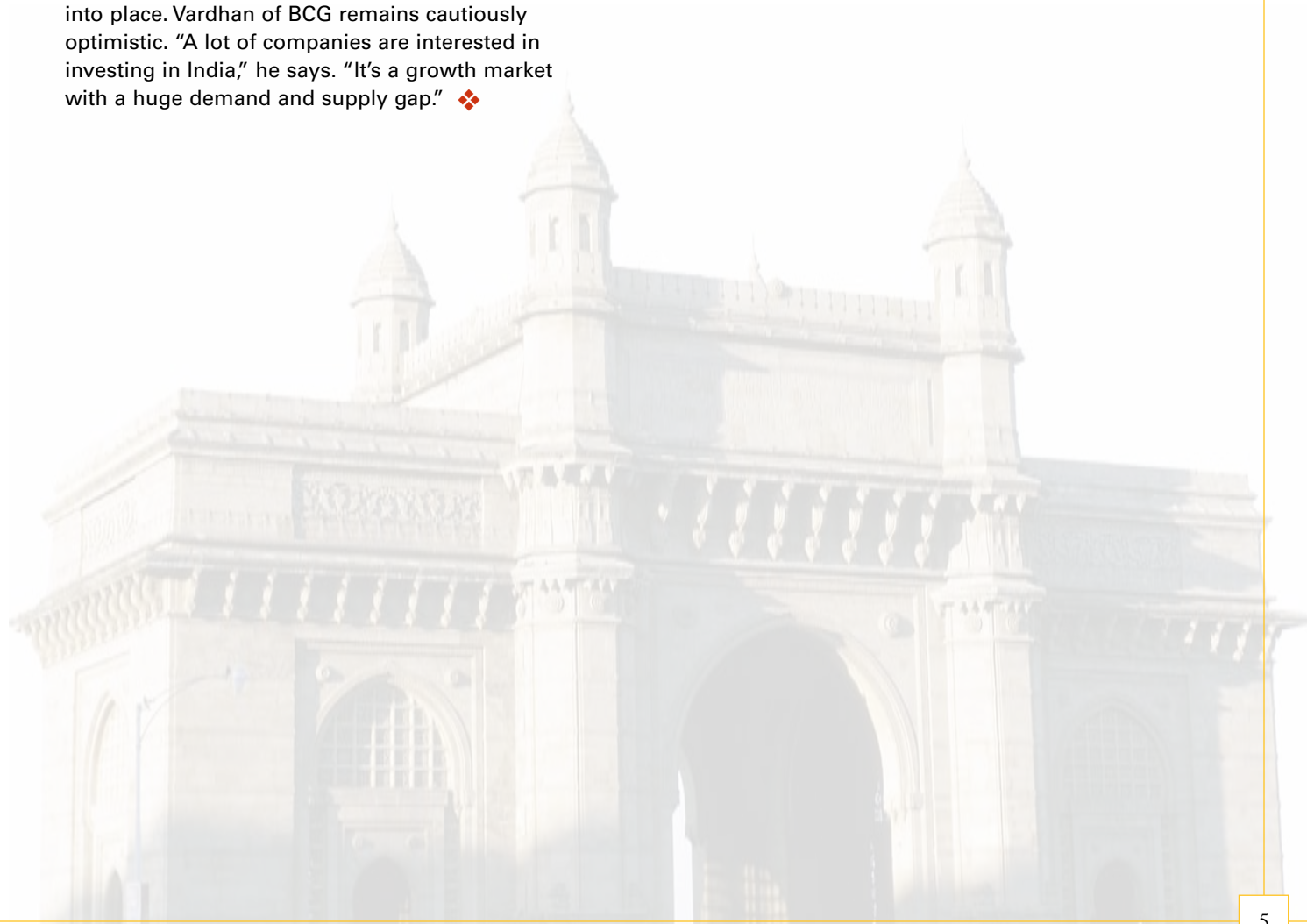
On a somewhat less tangible level, the reform process in telecom was seen as driven from within by a confluence of domestic factors, whereas with power the process was seen as an agenda of the World Bank, which made implementing it that much harder.

## Looking Ahead

In telecom the future looks bright. The Telecom Regulatory Authority of India estimates that in 2005, India added on average 338,000 fixed lines and 2.3 million mobile phones each month. Waiting lines for phone connections have evaporated. According to BCG analysts, urban teledensity is expected to soar to 60% by 2010.

“A lot more needs to be done,” says Wharton’s Aron. “But compared to power, ports and roads, this is an extraordinary fairy tale with a happy ending.”

Power has some way to go to achieve the telecom success. Captive power plants allow Indian industry to overcome these problems, albeit at a cost. However, the recent successes of UMPP policy show that finally the policy structure may be falling into place. Vardhan of BCG remains cautiously optimistic. “A lot of companies are interested in investing in India,” he says. “It’s a growth market with a huge demand and supply gap.” ❖





## Indian BPO Firms Step Out of the Back Office, toward Knowledge Process Outsourcing and Beyond

### In December 2006, Mumbai-based

Tech Mahindra won India's biggest outsourcing deal to date — a five-year, \$1 billion contract from British Telecom to provide technical support. Tech Mahindra, in which BT has a 35% stake, bettered a September 2005 deal in which three Indian IT services firms were among five international providers picked by Amsterdam-based financial services company ABN Amro for one of the biggest outsourcing contracts ever handed out, beating many big-name global contenders. Infosys Technologies, Tata Consultancy Services and Patni Computer Systems share that \$2.2 billion, five-year contract with IBM and Accenture. In another corner of India's outsourcing industry, a much smaller firm created a niche "spot market" for knowledge services. Yet another Indian outsourcing service provider built a platform of expertise to provide patent-related legal resolution support services — several notches above the patent writing functions that were considered high-end assignments until recently.

According to recent BCG research, the Indian outsourcing services industry as a whole helps its clients save \$1.5 billion annually.

Those are just a few samples of the dramatic progression achieved by Indian outsourcing service providers in their offerings. Although 65% of India's 180,000 outsourcing services work force is involved in transaction-intensive services like call-center support or check processing, the industry as a whole helps its clients save \$1.5 billion annually, according to a recent research paper, "Offshoring:

Beyond Labor Cost Reduction," by the Boston Consulting Group (BCG). (India's outsourcing services industries employed about 415,000 people as of March 2006, according to India's National Association of Software and Services Companies.) GE alone saves more than \$350 million annually after offshoring about 900 different processes to India, according to the paper, which was written by analysts in BCG's New Delhi offices.

At every juncture in the nascent industry's growth curve, its players seem to be discovering a kaleidoscopically changing array of new frontiers, beyond merely scaling up in their familiar territories. Interviews with senior executives at BCG, faculty members at Wharton and outsourcing services industry players reveal the contours of tomorrow's service offerings. The industry now seems to have achieved critical mass in its quest for providing knowledge process outsourcing (KPO) services, where skills, judgment and discretion are the tools.

Ravi Aron, senior fellow at Wharton's Mack Center for Technological Innovation finds enough evidence to support that climb up value chains. In fact, Aron, who has consistently followed trends in this industry, had four years ago predicted the emergence of what is now commonly referred to as KPO. "Instead of routine data work, you move towards more of information extraction, which involves a certain amount of judgment, interpretation, discretion and inference," he says. "You are seeing more of that happen. Instead of medical transcription, data entry and minimal inbound call support, people are now offering high-end research services." He adds that these do not make for whole new trends: "What we are seeing is a substantial and significant difference in degree, but not of kind."

Thomas Bradtke, manager in the Boston office of BCG and one of the firm's topic leaders on globalization, agrees with Aron. "The Indian companies

started as labor arbitrage shops and are now moving into knowledge-intensive services," he says. "These guys know how to reengineer processes; they don't just throw a hundred people at a problem, but they make the process flow better and make it more effective." He sees that as another form of innovation, much like what an industrial products manufacturer might produce out of its R&D labs.

BCG's in-house research found several U.S. and European firms achieving significant cost benefits from offshoring, in addition to mere wage arbitrage savings. One U.S.-based high tech company achieved productivity improvements of over 50% over six months, "driven by higher quality recruits, greater digitization, domain and re-engineering capabilities and continuous measurement of performance," according to the BCG-authored paper. The client had offshored a complex order management process; those 50% gains showed up in about 2,000 orders received every day from 50 offices in three languages. Other clients took home enhanced process quality from standardization, discipline, higher skilled resources and greater focus on process performance at their BPO services provider.

In this emerging market space, Aron sees some of the most compelling work at companies like Office Tiger, a New York City-based service provider with the heart of its delivery capabilities in Chennai, India. (Business solutions provider R. R. Donnelly & Sons acquired the firm in March 2006.) Office Tiger offers high-end decision support services for clients, including some of the world's largest investment banks and financial institutions, legal firms and retail chains. Another firm he cites is Pangea3, a legal and related services firm with offices in Mumbai, New York City and San Jose, Calif. that was founded by legal professionals with their primary grooming in U.S. practices. The firm has more than 65 attorneys and 25 patent engineers doing specialized background legal research for patent-related and other cases.

## Leaping to the Next Level

Indian providers of IT services led the outsourcing boom in the late 1990s, mainly with data entry, standard processes and conversion assignments in the Y2K era. But to secure a local presence in foreign markets and become true multinational players like a Toyota America or a Sony USA, companies must invest in hiring locals, says Wharton professor of management Saikat Chaudhuri. Companies like Infosys, he notes, have begun doing that on a larger

scale, hiring senior people away from industry majors like EDS of Plano, Texas. "These are people who have access to the higher-end executives at potential client companies, not those who do back-office work," says Chaudhuri.

Indian outsourcing service providers now have to make a leap to the next level, which is "access to the CEO or the CTO," and capture high-end consulting work at big companies, not just product development assignments, says Chaudhuri. "Such consulting work could be devising strategies for technology solutions — like what IBM Global Services, Accenture or EDS do — and not just implementing them. Indian companies are now starting to get into the implementation stage with larger, big-ticket deals, but they are still not bagging the high-end consulting services deals."

In the ABN Amro mega-deal with Infosys, Tata Consultancy Services and Patni Computer Systems (along with IBM and Accenture), the bank sought to achieve "in-house consolidation, partial outsourcing, multi-vendor strategies and offshoring." Over an 18-month period, ABN Amro projected a reduction in its own IT staff headcount by 1,500 full-time equivalents. With the resultant lower wage costs and related efficiencies, ABN Amro expects to achieve annual savings of \$300 million by 2007, rising to more than \$700 million thereafter.

## The "Spot Market" for Research

Aron's third illustration of high-end KPO work is Pipal Research of Chicago, which was founded five years ago. The company employs about 100 analysts, with most of them based in New Delhi. Until recently, the bulk of its assignments came from equity research, fixed-income asset research and asset pricing-related work. A year ago, it carved out a division called PipalAnswers that functions like a "quasi spot-market for knowledge." These are essentially one-off assignments tailored to service occasional requirements of clients, unlike Office Tiger, which has dedicated long-term client relationships.

PipalAnswers is the brainchild of Sanjeev Arora, Pipal Research's vice president of products and operations based in Chicago. His new product offers speedy research on tightly focused client requirements such as snapshot insights of rival companies' ad spends and public relations. Arora cites one client who "needed information in three days. We picked up the information over the Internet, analyzed it and gave a quote within a few hours, which they approved online."

Arora says that while PiplAnswers' research work is carried out primarily in India, it certainly helps to maintain a U.S. base. "Within the first few days of launching our service, we fielded a project on pet foods," he says. Branded pet foods makes for a tiny industry group in India. "Someone in India may not even fathom how crucial that is for American customers. Having a strong presence here allowed us to understand the market."

To be able to muster the information resources across a range of industry domains, Pipl spends between \$75,000 and \$100,000 on a variety of databases. "You can't just Google everything," says Manoj Jain, Pipl Research's founder and CEO. Pipl's fees range from \$20 to \$100 an hour for its specialist research support products. The company also markets a Web-based proprietary "knowledge management tool" which client companies can use to absorb information across different divisions, functions and locations of their organizations, and retain it in a searchable repository. Jain says this allows clients to raise their "people power" from mere experience to one of apprenticeship.

To secure a local presence in foreign markets and become true multinational players like a Toyota America or a Sony USA, Indian outsourcing companies must invest in hiring locals, says Wharton's Saikat Chaudhuri.

Those ambitious ideas must have encouraged Firstsource Solutions (formerly ICICI OneSource), a large outsourcing services provider in Mumbai that in 2004 bought 51% of Pipl Research (the remainder is with Pipl's management). "They operate on the extreme high end of even the research space," says Ananda Mukerji, CEO of Firstsource Solutions. "We saw their business as an attractive area of outsourcing with a lot of potential." Firstsource Solutions is India's fifth largest outsourcing services company with more than 9,000 employees, and posted \$124 million in revenue in its latest financial year ending March 2006. Mukerji declined to divulge Pipl's revenue.

Aron says that such high-end analysis requires domain expertise, not domain experience. When it comes to doing such work in India, clients are concerned with two things — expertise and cost. To address the first concern, he says, "You want somebody with a master's degree in finance, who has a deep understanding of cash-flow analysis techniques, who's able to project and do numerical manipulations, which will be able to take data from an engineer and weave it into a report." And he sees the second issue as a "no-brainer." "There is no question that the cost of expertise is lower. In fact, the greater the expertise, the greater is the arbitrage ratio." He explains that the wage cost arbitrage for call-center operators between the U.S. and India "is a lot, lot less" than that for high-end information analysts. He puts that arbitrage ratio at 6:1 or 7:1.

According to Wharton's Chaudhuri, "cost advantage at equal quality" continues to be a powerful value proposition for Indian outsourcing services companies — in the least, it works as a foot in the door. "As they get larger and larger contracts, such as the ABN Amro deal, inevitably they are going to be dealing with higher levels of the organization, because these are much bigger [than other contracts] for the organization that is giving them out," he says. "If you have done all the processes at a company — not little bits and pieces here and there — you understand a tremendous amount about how that company and its industry functions." That, says Chaudhuri, would mean a quantum jump for BPO service providers who get that far.

### Room to Grow

BCG's Bradtke discounts industry watchers who talk of narrowing profit margins of the Indian outsourcing service providers as client companies drive harder bargains. "If you look at the growth rates of the big three or four Indian BPO companies, they are not reducing their levels of profitability," he says. Tata Consultancy Services (TCS) is the biggest: Its revenues grew 41% last quarter to cross the \$1 billion mark in the last quarter ending December 2006, taking its tally for the last three quarters to more than \$3 billion. TCS's profits grew 44% to nearly \$470 million in the same period. Rival Infosys also showed robust revenue growth of 47%, to \$2.16 billion in the last three quarters, while Wipro posted 42% growth in the same period to earn \$2.4 billion in revenues. Profits also grew handsomely at both Infosys (50% to \$600 million) and Wipro (44% to \$470 million).

Unlike in many industries, the Indian outsourcing services industry has established itself in the global markets without a significant home market to act as a springboard. "It's a classic example which in some ways goes against conventional theory," says Arindam Bhattacharya, vice president and director at BCG in New Delhi.

Bhattacharya recalls that Japanese and Korean companies "leveraged their practically closed home markets" to build global businesses. By contrast, Infosys last year earned more than 98% of its \$2.1 billion revenue from overseas operations. "It's a fundamental strength in the business model, where they break up the value chain and are able to leverage the low-cost position in their home country," he says. That is distinct from the advantage Chinese companies like appliance maker Haier or telecommunications equipment maker Huawei have with a large domestic market that dominates.

Peering into the future, Bradtke sees a glass that's more than two-thirds empty. "The big U.S. companies may have taken 30% of their services and given them to India, but there's still 70% of those services left in those companies, many of which they haven't even looked at," he says. Industrial companies may have started with outsourcing accounting, legal, commercial and other administrative processes, but Bradtke sees others in line — environmental health and safety-related functions, for instance. He says a big multinational with 100,000 employees may have between 500 and 800 people doing just environmental health and safety work, from statistics that need to be sent to regulators to analysis and other back-office functions.

Bradtke says similar openings for outsourcing exist in areas like quality control and quality assurance, production planning and cost analyses. "Those higher-value services might be more difficult to outsource, but as the Indian companies learn how to deal with those clients, understand their needs and modus operandi, they will also upgrade their capabilities," says Bradtke.

## The Risk Factor

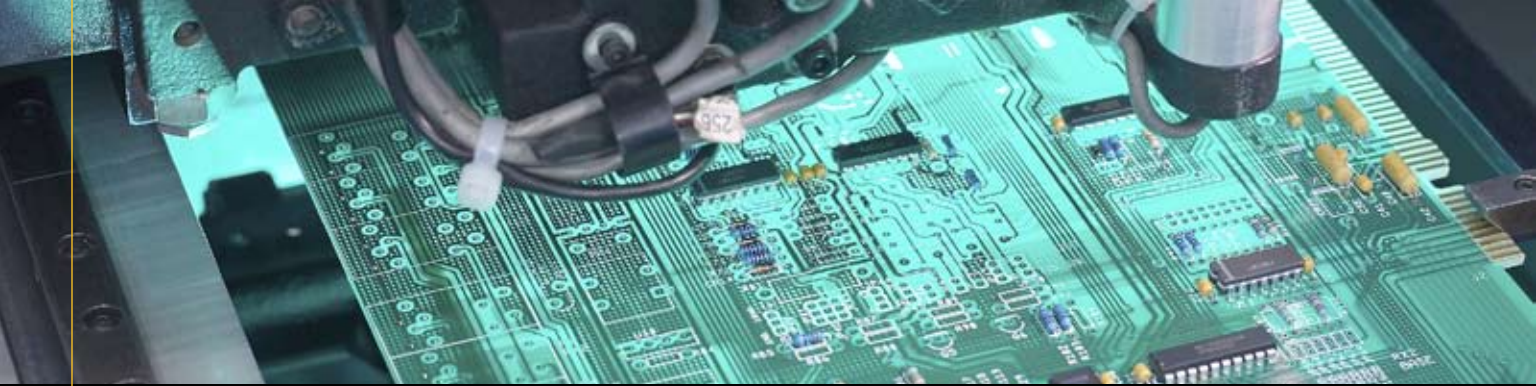
BCG executives, however, advise client companies to weigh several factors before parceling away their services overseas, including the elementary lesson of not always picking the lowest bid. Understanding and defining acceptable risk levels is one of the first hurdles. "In our experience, most business leaders are most sensitive to the risks that business process

outsourcing to low cost countries entails," write the authors of a recent BCG paper titled, "BPO: Keys to Successful Execution." According to the researchers, a common concern with clients is: "Will their customers go away if their calls are answered by an agent in India?" They also have to weigh operational risks like natural disasters and technology failures, and performance risks such as pricing traps and non-delivery on service-level agreements.

"All of these risks can be managed by the right delivery model, vendor selection, service level agreements and price negotiations," the authors say. Client companies would do well to check out geo-political stability and infrastructure capabilities — among other factors — in the outsourcing service provider's country, they add. Corporations are also advised to consider a risk-mitigation approach by hedging their operational risks across multiple locations.

While those may be reasonable protective measures, Firstsource's Mukerji doesn't relish the fact that isolated data security and privacy violations have become high-visibility issues disproportionate to the ground realities. "Any incident tends to get magnified," he says. "We as an industry follow better security practices than in the U.S., where you have violations every week but they don't hit the headlines." Adds Hal Sirkin, senior vice president at BCG based in Chicago: "I don't often hear about India in stories where people are discussing intellectual property violations."

As clients and service providers grapple with restructuring the delivery of their existing services, they will also likely find new opportunities to improve efficiencies — and will begin to offer "services that don't even exist today." That will be the next wave of offshoring, says Bradtke. For instance, over the years many companies have collected piles of data on their operations. "Indian outsourcing providers could say: 'Give us your data and we will help you interpret it,'" he says. If analyzed, that data could provide valuable insights into new ways to cut costs or improve efficiency. While waiting for that to unfold, no one watching this industry is taking bets on what other unheard-of services lie out there. ♦



## India in the Global Supply Chain: Can Domestic Demand and Technology Skills Help It Catch Up?

### In the global economy of the early

twenty-first century, the division of labor between Asia's giants is clear. China, the world's factory floor, makes things — everything from shoes to computers. India, the world's back office, does things — from fixing software glitches to chasing down credit card debt.

India's services sector may be red hot, but the same can't be said for its manufacturing. Hampered by poor infrastructure, bureaucratic red tape and restrictive labor laws, it has failed to make its presence felt globally. Between 1990 and 2005, industry's contribution to the economy remained more or less stagnant, crawling from 25% to 27%. Over the same period, the share of services ballooned from 37% to 52%. According to experts from the Boston Consulting Group, in 2005 India's manufacturing exports were 6% of GDP (\$37 billion) compared to 35% for China (\$712 billion). About 60% of Chinese manufacturing exports are by firms headquartered outside China.

and Wharton. Driven by the emergence of a vast domestic market and relatively low-cost workers with advanced technical skills, more and more multinationals are setting up manufacturing operations in India. Ford, Hyundai and Suzuki all export cars from India in significant numbers. LG, Motorola and Nokia all either make handsets in India or have plans to start, with a sizeable share of production being exported. ABB, Schneider, Honeywell and Siemens have set up plants to manufacture electrical and electronic products for domestic and export markets.

In addition, a clutch of globally competitive Indian manufacturing companies — many of them in the automobile industry — have inserted themselves into the global supply chain. Sundram Fasteners makes generator caps for General Motors. New Delhi-based Moser Baer has established itself as a global manufacturer of data storage media such as DVDs and CDs. An aggressive group of pharmaceutical companies — India has about 60 plants that meet the stringent quality standards of the U.S. Food and Drug Administration, the largest number outside the U.S. itself — are opening new markets around the world.

"Over the past five or six years, many firms have restructured their manufacturing operations and implemented world-class practices," says Arindam Bhattacharya, director and head of the industrial goods practice in India in BCG's New Delhi office. "Slowly but surely they have started building a globally competitive manufacturing base in industries like pharmaceuticals, auto components, cars and motorcycles."

### Domestic Demand

India's potential manufacturing renaissance is still in its early stages, but it's already clear that it will look very different from China and East Asia. Dalip

Between 1990 and 2005, industry's contribution to the Indian economy remained more or less stagnant, crawling from 25% to 27%.

"To date, India has not begun to play a big role in the manufacturing footprint of multinationals," says Sachin Nandgaonkar, a director in BCG's New Delhi office. "Though, if you compare it to five years ago, things are improving."

Beneath the surface, however, things have begun to change rapidly, according to experts at BCG

Pathak, a managing director at private equity firm Warburg Pincus, which has investments in both China and India, says China's world-class infrastructure and a government that is focused on employment generation by smoothing the way for manufacturers makes it an excellent choice for long-term investment in manufacturing.

In India, the sailing isn't quite as smooth. India's literacy rates continue to lag East Asia's and average unskilled labor productivity in India is lower than in China or Vietnam. However, there are many instances where average productivity is much higher due to superior management practices, says Bhattacharya. Restrictive labor laws — companies that employ more than 100 workers need government permission to fire them — make India a poor choice for large labor-intensive industries such as shoes and toys. Some parts of the economy, such as handlooms, remain reserved for inefficient small-scale industry. Expensive and unreliable electricity, poor roads, clogged ports and red tape add to the disincentives. According to the International Finance Corporation's September 2006 rankings, it takes 35 days to start a business in India, compared to 5 days in the U.S. and 18 days in the U.K. India, however, is in the same league here as China (35 days) and Thailand (33 days), but way ahead of Brazil, where it takes 152 days to start a business.

As a result, says Saikat Chaudhuri, a professor of management at Wharton, global manufacturing in India is being driven largely by domestic demand. He points to mobile phone manufacturers such as LG, Nokia and Motorola and car companies such as Ford, Hyundai and Toyota. Some of that is changing, though. As an example, Bhattacharya offers Hyundai, which has designated its Indian plant as its only plant worldwide to make small cars, and is shifting production from Korea to this facility. The gradual scrapping of import licensing, lowering of tariffs and a liberalized exchange rate regime have all contributed to a sustained domestic, consumption-led boom. According to BCG estimates, annual domestic car sales have shot up from 265,000 in 1995 to 820,000 in 2005; in the first eight months of the current fiscal year, domestic car sales were nearly 870,000. Indians buy more than three million new cell phones each month.

"Where domestic demand has grown, it makes sense to build a supply chain," notes Chaudhuri. "That will be the model until India can improve its infrastructure and attract more FDI." The acute price sensitivity of the Indian market also adds to the incentives to manufacture locally. Bhattacharya says

the government's focus on increasing manufacturing growth through special economic zones, private participation in ports and massive investments in roads, among other things, is already paying dividends.

David Snyder, executive director for business development for Ford Asia Pacific, estimates that India's auto market, including utility vehicles, will double over the next ten years, from about 1.4 million vehicles to 2.8 million. This is a quarter of the growth — in units — Ford expects in China, but more than the growth of 1.3 million new vehicles it expects to see in the Asean (Association of Southeast Asian Countries) over the same period. With sales in North America, Europe and Japan expected to remain flat, Asia-Pacific as a whole — with a focus on China, India and the Asean — are Ford's priority growth markets.

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*“Over the past five or six years, many firms have restructured their manufacturing operations and implemented world-class practices,” says BCG’s Arindam Bhattacharya.*

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### **Auto Parts: India's Showcase**

As the success of firms such as auto-parts maker Bharat Forge shows, India's competitiveness lies in relatively high-end manufacturing. Indian universities turn out an estimated 400,000 engineers a year, second only to China.

In auto parts, India's showcase in manufacturing, more and more firms have upgraded their technology and processes and emerged as reliable suppliers of parts to multinationals. Over a dozen, among them Sona Koyo Steering Systems, Sundaram Clayton, and TVS Motor, part of the Chennai-based TVS group, have won the Deming prize, a prestigious Japanese award for quality. While most auto parts exported from India are simple, Toyota has begun shipping transmissions from its plant near Bangalore. Nandgaonkar points out that the decision was prompted as much by quality as by cost. "If I can have Japanese quality at a much lower cost, then why not?" he says.

In addition, India's pool of scientific talent allows its companies to de-automate, and locally design and procure, some of the more expensive aspects

of auto parts manufacturing. BCG estimates that such process engineering can cut capital costs of component plants by 40-60%.

“There’s limited competitive advantage in structural terms if you look at the economy compared to China,” says Bhattacharya of BCG. “But a combination of strong leadership and an ability to harness brainpower in an innovative way makes these firms competitive.”

Global trends may also favor India as more companies in the U.S., Japan and Europe outsource manufacturing to keep down costs. Besides auto parts, telecom equipment and pharmaceuticals, India has the potential to be competitive in such skill-intensive industries as fabricated metal products, high-end chemicals, consumer electronics and computer hardware.

Nandgaonkar of BCG says recent improvements in infrastructure and a move toward greater efficiency in Indian export parks make him optimistic. He also sees the emergence of a new generation of young entrepreneurs with global ambitions and the savvy to realize them. Pathak of Warburg Pincus adds that the lowering of interest rates in India in recent years and the advantage of well-regulated and efficient capital markets, rated among the best in Asia, also add to India’s lure. “In ten years, India will have a meaningful footprint in global manufacturing,” says Pathak.

“I see the story of manufacturing unfolding in India through a combination of growing domestic demand and skill-driven export competitiveness,” says Nandgaonkar. “If you look at the proposed and new investments in the manufacturing sector, you’ll see the numbers grow rapidly over the next five to ten years.”

Chaudhuri, too, is optimistic. “Every major company has India on its radar screen,” he says. “It’s just a matter of timing.” ❖



## Bharat Forge Pulls Ahead of Indian Manufacturing, but Obstacles Lie Ahead

**It's a surprising fact:** The world's largest factory for forgings — parts for engines, axels and the like — sits not in Detroit, Tokyo or Stuttgart, but in the industrial city of Pune in western India.

The factory, equipped with gleaming robots and networked with plants overseas for technical support, belongs to Bharat Forge, foremost among a group of auto parts companies that are rapidly putting India on the world map for manufacturing. Bharat Forge has embraced a strategy that includes heavy investment in technology, a scientifically skilled workforce, and aggressive overseas acquisitions. Along the way, it has been helped by a growing domestic auto industry and by fragmentation and ferocious cost-cutting by large auto manufacturers worldwide. In recent years, the Pune-based firm has emerged as a bellwether for India's auto parts industry, akin to the position Bangalore-based Infosys Technologies holds in the far more high-profile information technology industry. Some see the comparison as particularly apt.

"Information technology leveraged India's intellectual power in services," says Amit Kalyani, executive director of Bharat Forge and son of the firm's chairman, B.N. Kalyani. "We're doing the same in manufacturing. It's very similar."

With turnover exceeding \$650 million and a roster of blue chip clients that include DaimlerChrysler, Toyota and Ford, Bharat Forge's success offers a roadmap to other ambitious Indian manufacturing firms. Sachin Nandgaonkar, a director based in the Boston Consulting Group's New Delhi office, calls it a classic example of a company with an entrepreneurial management team that understands the global industry well.

Yet, say experts at BCG and Wharton, Bharat Forge's story also illustrates the hurdles Indian industry

must overcome, ranging from weak infrastructure to low labor productivity. "I see pockets of competitiveness and efficiency in Indian manufacturing, but in a vast sea that is technologically outdated, labor intensive and not sufficiently quality driven," says Saikat Chaudhuri, a Wharton management professor. "Bharat Forge is a primary example of that island of competitiveness."

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In recent years, Pune-based Bharat Forge has emerged as a bellwether for India's auto parts industry.

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### Brains, Not Muscle

Bharat Forge was founded in 1961, during the heyday of Nehruvian socialism in India. At the time, central planning and import substitution were pillars of Indian economic policy. Although state-owned industries were encouraged to control the so-called commanding heights of the economy, the private sector was never entirely shut out. The firm, recalls Kalyani, was formed to serve two somewhat disparate markets — diesel engines used by farmers for irrigation and a nascent domestic auto industry.

"It was mainly buses and trucks," says Kalyani. "In those days, the passenger car market was very small."

At any rate, both irrigation and automobiles required engines, and engines required parts. Bharat Forge arranged for technical assistance from a firm in Cleveland, Ohio. It helped that the Kalyanis had close family ties with some of the region's leading industrial houses. Two of them, the Kirloskars and Tatas, ended up being among Bharat Forge's first customers.

Over the next three decades, India persevered with its brand of socialism even as Asian tigers such as Korea and Taiwan leapfrogged to prosperity powered by industrialization and exports. For Bharat Forge this was a time of consolidation within India's protected domestic market. It focused on technology and quality and carved out a reputation for reliability. Then in 1988, not long before India embarked upon economic reforms, Bharat Forge decided to take a big gamble: Realizing that it was not possible to achieve economies of scale with a relatively low-technology and low-skilled workforce, it invested one billion rupees (at the time, turnover was only 1.5 billion rupees) in a sophisticated German-engineered plant. "We decided to bet the house on technology," says Kalyani.

with a very deep knowledge of tool design. He's been the key factor in increasing productivity. They have gone against the grain, which was to use labor costs for competitive advantage. They are able to get the most out of their machines."

## Exports, Exports, Exports

In 1991, India began opening its economy to competition and foreign capital. The country's auto parts manufacturers moved to upgrade their technology and skills, accelerating a process that had begun with the government-owned Maruti Udyog's co-production of a small car with Japanese auto manufacturer Suzuki in 1983. Keeping with Japanese practice, Suzuki's suppliers in Japan had followed it to India and played a large role in technology transfer and training. After liberalization, India's potentially vast domestic market attracted a raft of auto companies. Toyota, Hyundai and Ford manufacture cars in India and source parts from Indian suppliers.

Bharat Forge's new high-tech plant was already up and running when, in 1996, a sharp downturn in the domestic market forced it to look outwards more aggressively. Kalyani reels off the factors that allowed Bharat Forge to grab a toehold in the fiercely competitive global market. The industry was fragmented worldwide; had it been dominated by a few big players it would have effectively shut out smaller ones. It was engineering intensive: skilled manpower mattered more than in labor-intensive industries such as shoes and textiles. Global auto companies were spread out across the world, which made them open to sourcing parts from a wide array of suppliers. Finally, in a capital-intensive and highly competitive industry, outsourcing to reliable high quality suppliers rather than investing the company's own resources began to make more and more sense. Between 1997 and 2005 Bharat Forge's exports grew more than seven-fold from \$16 million to \$117 million.

More recently, Bharat Forge's export strategy has been coupled with a series of overseas acquisitions. In the last two years alone it has snapped up five small foreign companies. Last year it bought Sweden's Imatra Forging, Europe's largest manufacturer of front axels, for an estimated \$57.5 million. In 2004 it bought German firm CDP Aluminiumtechnik for €3 million. The 2003 acquisition of Carl Dan Peddinghaus for £29 million gave Bharat Forge an infusion of new technology and access to customers such as BMW and Volkswagen. At present, Bharat Forge owns eight plants — two in India, three in

**Bharat Forge employs about 4,000 people; 80% are college graduates and a third are engineers.**

Along with the investment in technology came an upgrade of manpower. Traditionally, Bharat Forge, like other Indian firms, had employed a poorly educated workforce often virtually indistinguishable from farm labor. Now it began the process of replacing them with the kind of educated workers who would be able to make the most of the new technology. Through a combination of attractive severance packages and attrition a third of the firm's 1,800-strong workforce was replaced. By the time the transition was completed, a largely blue-collar factory floor had become largely white collar. Today, Bharat Forge employs about 4,000 people, but 80 percent of them are college graduates and a third are engineers.

"These are extremely bright, fast and hardworking people. They have good values," says Kalyani. "We needed computing and analytical skills which the blue collar guys just didn't have. For the company this was a cultural change. We replaced muscle power with brain power."

In retrospect the decision seems obvious, but at the time it was seen as risky. Arindam Bhattacharya, a New Delhi-based BCG director, credits Bharat Forge chairman B.N. Kalyani with foresight. "What sets them apart is that in Baba Kalyani they have an outstanding leader," says Bhattacharya. "He's ambitious, but also an outstanding technical person

Germany and one each in Sweden, Scotland and the U.S. In addition, says Kalyani, a new joint venture with FAW (formerly First Automotive Works) in China commenced production in March 2006. It will give Bharat Forge access to the Chinese market, which is four times larger than India's.

The acquisitions strategy is meant to bolster what the company calls its "dual-shore supply model." In a nutshell it means that it can supply all components to a client from two plants — one in India as well as one closer to the client. The plants in the U.S. and Europe reduce supply chain risks while the flagship plant in India — with economies of scale and relatively low-cost skilled labor — helps keep costs down. Bharat Forge's overseas operations currently account for about 40% of turnover, and the company expects this to rise to 50% over the next few years.

### Watching for Roadblocks

Bharat Forge dominates India's \$615 million market for forgings with about 45% market share. Over the past four years, the firm has grown at a compounded annual rate of 66%. Before-tax profit over the same period has shot up by 107%. Should this continue, Kalyani says the firm hopes to reach a turnover of \$1 billion in 2008, more than double the \$460 million of 2005.

The opportunities are vast. At present, India only exports about \$1.8 billion in auto parts each year. Countries such as Mexico, Canada and Japan export between \$25-35 billion. Analysts expect the global outsourcing in auto parts pie to keep growing — from \$110 billion in 2005 to \$700 billion in 2015. India's auto component exports have been growing at 25% annually, and have the potential to grow 15- or 20-fold over this period. To get there, firms like Bharat Forge will need to keep on performing.

"The India story till recently was driven by the success of the Indian software industry showcased by firms like Infosys, Wipro and TCS (Tata Consultancy Services)," says BCG's Nandgaonkar, referring to India's three largest software firms. "They gave confidence to Indian firms that they can compete on the global platform. Bharat Forge pretty much exemplifies the same in manufacturing."

But obstacles remain. Kalyani says the two largest are infrastructure and education. Compared to China, India's infrastructure — power, roads, ports and airports — is very poor. Firms like Bharat Forge have found ways around it. Nearly half of its power, for example, is generated in-house, but it can't do

everything itself. The roads network is still under-developed, and the turnaround time at ports is sluggish compared to the hyper-efficiency of Hong Kong and Singapore.

The deficiencies in education, says Kalyani, will begin to become apparent in about five years. He believes that demand for technically skilled manpower will outstrip supply. "In some of these institutes they're still using technology that's 30 or 40 years old," he says.

Bhattacharya also argues that more needs to be done to make globally competitive Indian manufacturing firms the norm rather than the exception. "Several external factors make India uncompetitive," he says. "There's power, transaction costs and tariffs." As an example he points out that in India, firms pay higher duties on steel than on forgings. And though the heavy hand of government in business has lightened since liberalization, it shows no sign of disappearing. "License Raj has gone away, but we still have Inspector Raj," says Bhattacharya, referring to the plethora of arcane regulations still faced by Indian businesses.

For India, the lessons of Bharat Forge's success are several. On the one hand, it shows that a focused and well-managed company can overcome commonly cited constraints such as poor infrastructure and inflexible labor laws to thrive in a globally competitive environment. On the other hand, it highlights the challenges to sustain this competitiveness given its reliance on skilled manpower in a country where most manpower is not skilled. A recent IMF report points out that overall, the Indian economy is tilted toward services rather than manufacturing, and that within manufacturing, it is tilted toward the skill-intensive rather than the labor-intensive kind. Unlike China and the rest of East Asia, India has traditionally emphasized tertiary rather than primary education. Unless India can broaden its industrial base to include competitive labor-intensive industries such as electronics, textiles and shoes, progress toward building large-scale, globally competitive manufacturing will be slow.

For now, though, analysts remain optimistic that a revolution in Indian industry has begun. "A lot of small component manufacturers look at [Bharat Forge] and say, 'Today we may be small, but if those guys could do it, why can't we?'" Nandgaonkar says. ❖

**What's Next for India**

# BEYOND THE BACK OFFICE

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