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Injecting intelligence

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INJECTING INTELLIGENCE

India's highly qualified workforce is enabling it to lead the way in process innovation. Nirmalya Kumar and Phanish Puranam examine how Indian companies inject intelligence into the often mundane.

Between 1970 and 2005, in a bid to make medicines more broadly available to its impoverished population, India allowed patents on manufacturing processes but not products. As a result, an entire industry in generic pharmaceuticals emerged. Indian companies reverse-engineered multinational pharmaceutical companies' patent-protected drugs and then manufactured them using slightly modified processes.

Some of the Indian companies developed their unique formulations into extremely lucrative and fast-growing businesses. Companies such as Cipla, Dr. Reddy's Laboratories, Glenmark Generics, Lupin Pharmaceuticals, Ranbaxy Laboratories, Sun Pharmaceutical Industries and Wockhardt not only dominated the Indian market but also built a substantial export business in off-patent drugs. These were sold initially to the developing world, but, more recently, to the developed world. By 2005, a dozen Indian companies were selling generics in the United States, and they accounted for about 20 per cent of the world's $48 billion generic pharma industry.

In contrast with the rest of the world, especially the developed world, where the best brains in the pharmaceutical sector are directed into the discovery of new molecules, the best brains in India have been diverted to reverse-engineering and generics. The result? India became a hot spot for the development and manufacturing of generics. In its desire to export more to the Western world, India built the largest number of US FDA-approved plants outside the United States and Indian companies have a deep competence in meeting the regulatory requirements of the United States and the European Union.

In 2005, when India agreed to comply with the international patent regime, multinational pharmaceutical companies were anxious to tap into these Indian "invisible innovation" capabilities — whether by setting up captive R&D centres in India (for example, AstraZeneca) or by subcontracting R&D processes, such as early-stage discovery activities, to Indian companies (for example, Aurigene Discovery Technologies by Dr. Reddy's Laboratories). Both strategies targeted savings on drug discovery and development costs (as much as 50 per cent), but perhaps even more important, they allowed Indian companies to leverage their

Process innovations are typically invisible to end consumers. India has a long history of process innovations.

unique formulations of foreign-patented drugs for the Indian market. Because branded generics represent a significant business for most of the major global pharmaceutical companies, many of these companies picked up the Indian formulations and applied their global marketing expertise and worldwide distribution muscle to the drugs. Recently, several alliances have combined Indian generics companies with Western pharmaceutical firms to market these Indian generics all over the world.

Process power

The evolution of the generic industry demonstrates India's ability to innovate processes. Process innovations, or improvements in the way something is produced (in contrast with product innovations, which pertain to what is being produced), are typically invisible to end consumers. India has a long history of process innovations. Indeed, in several new domains, Indian process innovations are coming to the fore and might grow to become visible — if not to end consumers, certainly to global customers. Surprisingly, these process innovations tend to originate in the less glamorous parts of the economy — call centres, knowledge process outsourcing, and even metal forging.

Although improving the way an existing product or service is delivered does not typically bestow the same global visibility on a company as building something utterly new, these innovations can be extremely powerful. Some of the process innovations in companies such as 24/7 Customer, Bharat Forge and DenuoSource also exemplify an unusual property: they stimulate the creation of new products and services for global B2B markets. That is, they are reversing the conventional picture of innovation. In this conventional, product-centric perspective, a product innovation generates a discontinuous jump in performance and defines a new trajectory; this new product then stimulates a series of process innovations that refine it, and the process is then followed by the next big product innovation, and so on.

In contrast, process innovations can provide foundations on which world-class and globally visible Indian companies can emerge. In the world of services, process innovations can even become a platform for launching novel product innovations and global brands. India may have an advantage in this kind of process innovation

because of what we call the injection of intelligence effect. The idea behind the concept is simple: companies in some of the less glamorous industries in India today employ people of a much higher calibre than do their counterparts in similar industries in the West. These industries in India can attract superior (some would even say overqualified) talent relative to their Western counterparts, mostly because of the different portfolios of career options across countries. Consequently, an injection of intelligence gives new life to industries that the West has largely written off as dead ends for innovation, resulting in process innovations and sometimes even the development of new products.

"We brought in one simple strategy of speed to market to overcome challenges. We created a process to do things in a third of the time a European or American company took to do similar tasks, using technology."
Baba Kalyani

Forging innovation

Consider Bharat Forge, which manufactures various metal forged and machined components for the automotive and other sectors. It experienced dramatic success in the form of export-driven domestic growth when it changed its workforce from muscle power to brain power. Historically, the combination of available cheap manual labour and high capital costs led Indian companies to make an archaic trade-off: instead of investing in technologically sophisticated production equipment, they employed a massive blue-collar workforce in labour-intensive manual production processes. In this, Bharat Forge was no exception; most of its hammer-shop operations for making forgings were manual. However, CEO Baba Kalyani soon came to realise the impossibility of consistently making world-class products using manual processes. He correctly identified the core competencies in which Bharat Forge would need to invest to become a player on the world stage: speed to market, high quality, low cost, volume, production flexibility, and a distinctly customer-focused orientation. He also realised that these competencies were not possible without a highly trained, motivated and productive workforce. To realise this vision, Bharat Forge needed to invest considerably in technology, in the hope of gaining a future advantage.

In the late 1980s, Bharat Forge acquired several new, state-of-the-art, fully automated press lines for manufacturing forgings, even though the existing manual workforce in the hammer shop did not know how to operate them. The company placed these new machines in a brand-new workshop, run by freshly recruited, young white-collar employees with science-based degrees. Unlike the old forging shop, where workers possessed narrow specialisations (such as machinist, grinder, fitter), this new workforce would be multiskilled and capable of performing several jobs, at very high levels of productivity. The older manual employees could retire early, and many chose to do so. The remaining employees received extensive training to upgrade their skills.

The impact of this transformation was dramatic. The company moved from an 85 per cent blue-collar workforce in 1989 to an 85 per cent white-collar workforce by 2000, including more than 700 engineers. Because the company owned so many engineering resources, compared with global competitors, it could improve quality and increase speed, even as it lowered costs. Kalyani described these advantages: "We brought in one simple strategy of speed to market to overcome challenges. We created a process to do things in a third of the time a European or American company took to do similar tasks, using technology. ArvinMeritor (a tier-one automotive supplier) visited our plant and found us producing a part for their automobiles in just three weeks from scratch. They were blown away. We used speed to market to develop the confidence. We did the same thing with Caterpillar. Low

cost, high technologies and speed of delivery have all helped us to be accepted in Western markets."

What Kalyani does not emphasise, though, is that it was not merely the technology, but also the use of highly qualified talent (perhaps even overqualified talent, by Western standards) that enabled Bharat Forge to gain a technological edge over its Western rivals.

As the examples of Pfizer and Bharat Forge show, the availability of talent at a reasonable cost often pushes Indian companies to assign what the developed world would consider overqualified people to relatively mundane processes. This injection of intelligence can then lead to process innovations that provide the basis for globally competitive processes and products. Consider that it is perhaps only in India that millions of young people aspire to work in a call centre!

From taking calls to reading minds

The customer-contact business has evolved significantly during the past few decades, especially because of offshoring and the growth of the internet. But in some fundamental ways, the business has not really changed. Contact with customers can now take place through multiple media channels, including call centres halfway around the world, yet the basic business is still about responding to customer queries or contacting large numbers of customers in the hope of selling to at least a few. By injecting intelligence into their call centres, though, some companies are changing such practices.

A Silicon Valley start-up, 24/7 Customer handles upward of ten million customer contacts each month for global clients, including retailers, mobile phone service providers, financial services companies and firms in the hospitality industry. Beginning in 2000, when, as a 100 seat call centre, the company started providing standard services from Bengaluru, 24/7 Customer has expanded to include 7,000 seats. This remarkable growth followed mostly from a standard outsourcing growth model: add seats, add revenue. This simple, highly profitable model is perfect for the outsourcing industry, in which revenues are typically linked to the number of customer interactions. Thus far, 24/7 Customer's story sounds

"Commerce will never be 100 per cent human-interface free. Humans are hardwired to connect. That is an incredible marketing opportunity!"
V Bharathwaj

just like that of many other IT and business process outsourcing start-ups in India. In particular, a skilled labour force with high proficiency in spoken English (at less than half the domestic US-European labour cost) helped Indian firms that outsource business processes reach a 30 per cent average growth rate from 2004 to 2008. This model offered profitability, but was also accompanied by high staff churn, because growing companies in every major city in India fought for talent.

Around 2005, 24/7 Customer's management recognised a shift in its competitive arena, as V Bharathwaj ("Bharath"), 24/7 Customer's Chief Marketing Officer, explained: "It was becoming evident that outsourcing providers were splitting into two types... generalists, who provided basic service levels, or specialists, providing premium services. The generalists competed primarily on cost and scale, and the advantage was with the large, global suppliers like Convergys and IBM. 24/7 Customer couldn't match their size and knew we would have to compete differently... While we couldn't compete on cost, we could compete on innovation."

Competition can be a spur to innovation, even in an allegedly low-tech sector such as the call centre business. But having the talent in place to deliver it is what makes 24/7 Customer such an unusual company in the industry.

The management team sought a specialist area in which it could add value for clients. To start, 24/7 Customer looked internally at its capacities and realised that the data mining work it was already handling for clients offered a value-added opportunity. The company developed tools that collated data about the past behaviour of customers and mined this information for patterns and other clues that might indicate customers' intentions.

Mapping customers

For example, the company found that about half of all people who visited a commercial website intending to buy something eventually gave up, usually because they were confused — by the product descriptions, navigation or checkout procedures. So 24/7 Customer's iLabs division developed SalesNext, a proprietary business intelligence tool set, for clients such as Adobe Systems and CapitalOne Financial Group. With these tools, contact centre agents intervene at crucial points in transactions and help convert more than 15 per cent of website visitors into buyers, compared with base rate data that shows that on average, only 1 to 3 per cent of all website visits ended in transactions. P V Kannan, CEO of 24/7 Customer, succinctly summarised the result: "Clients get buyers, not browsers."

The general approach adopted by 24/7 Customer's predictive-modelling products works like this: using behaviour mapping models, the company estimates a customer's income and sensitivity to a price point. By analysing a recorded selection of the customer's voice, the tool can gauge his or her emotional state and then combine this information with the customer's history with the company and frequency of contact. website visitors are then classified as hot or cold leads. For example, the firm can now predict that a man visiting a website on a Wednesday afternoon between 3pm and 5pm, through a cable connection from San Jose, with a US postal code ending in 42, is more likely to buy Product X than is a woman visiting on a Thursday morning between 10am and 11am, through a dial-up connection from San Antonio, with a US postal code ending in 18, when both of them are browsing the jewellery section for at least five minutes. Contact centre agents therefore make personalised contact with the most promising leads through web chats, using this form of interactivity to move the visitor from browsing to purchasing.

The predictive-modelling product enables a knowledge-driven intervention in real time (through chat or voice), which results in high-quality assistance to the right prospect, at the right time, with the right offer, with the right contact centre specialist agent. The company applies this product to all its channels, whether they be web, voice or e-mail.

The same logic applies to the service side, where 24/7 Customer's ServiceNext analytical tools can predict when customer service intervention is needed and, if so, can then help formulate an individualised response. The technology is proprietary, and patents in the US patent regime are pending. The

underlying goal behind this innovative approach is to reduce redundant interactions and thus minimise call centre contacts, customer frustration, and, ultimately, costs. For example, banking, insurance, and telecommunications sectors typically entail high customer engagement levels, which lead to high operational costs and many potential moments in which customer satisfaction can be ruined. Therefore, iLabs came up with a process to mine customer engagement data and current market events and then combined these with product life-cycle data and regional demographics. Such business intelligence offers a good prediction of the questions and responses an individual customer might have and thereby matches the best contact channel (e-mail, chat, voice) or agent to the customer, all in real time. The system then tracks customers' behaviour and feeds it back into the tool set, to allow for changing model variables and dynamic refinements to the whole process. Thus, the "voice of the customer" rings out clearly. iLabs claimed 80 per cent accuracy for its predictive thresholds.

Kannan suggested thinking of this system as "an ecosystem comprising the website's business managers, who may be in the US, the contact centre agents, who may be sitting in Mexico or anywhere else in the world, the mathematicians and statisticians predicting the interaction, who may be sitting in India or Eastern Europe and the global operations centre... They all collaborate to provide a unique dynamic experience for every visitor who comes to the client website or contact centre."

By 2009, about 12 clients in retail, technology, financial services and telecommunications space had joined this ecosystem by subscribing to the predictive analytical services at iLabs. The clients constituted about one-third of 24/7 Customer's entire customer base. "We are improving conversions, improving customer satisfaction and increasing customer stickiness while reducing costs," Bharath noted. "Our clients are seeing results, and since these are proprietary, intellectual-property-driven services, these are typically high-profit, high-value deals for us." Live video might be the next extension of website interventions, he said. "We haven't added a video component yet; consumers are just warming up to text chatting... This is still leading edge."

By its very nature, the purpose of web commerce is to minimise human contact. As voice-based customer care becomes relatively more expensive, could this technology actually eliminate the need for human touch? Staff typically accounts for about 70 per cent of the cost of running a call centre, so could economic forces be pushing toward the elimination of call centres? Bharath disagreed. Even if a firm deploys all the intelligent customer-service products possible, he maintained that complete automation is not achievable or even desirable: "Commerce will never be 100 per cent human-interface free. Humans are hardwired to connect. That is an incredible marketing opportunity! By carefully understanding and respecting this need, you can build lifetime loyalty and goodwill for your brand, cheaper and more efficiently than ever before. We are at the technological forefront of this ability, and innovations will continue to be uncovered — by humans!"

Turning art into science

Let us consider another example from an industry that is perceived to have higher levels of technical sophistication than that associated with typical call centre work. Despite these technical differences, the path to product development for DenuoSource — a small, private analytics firm with operations in North America, Europe, and Asia-Pacific — is similar to that of 24/7 Customer. Since DenuoSource's inception in 2006, the client base has multiplied, profits have increased at a steady rate, and the company has grown from a mere vision of two classmates at the Kellogg School of Management — namely, Rahul Chowdhury and Amrit Kriplani — to a team of more than 150 professionals.

A few years ago, DenuoSource landed a unique opportunity with an existing customer, a large Fortune 500 retailer, that faced the common dilemma of determining the appropriate markets in which to open new stores. Location analysis and sales forecasting traditionally have been considered an art, carried out by real estate or finance departments, with inputs provided by analytics companies such as DenuoSource. But

INTELLIGENT STEPS

A unique feature of the Indian economy is the ability of certain sectors to attract talent with qualifications vastly superior to the qualifications of those employed in the same sectors in Western countries. Compared with the Indian workforce, Western employees with comparable qualifications and talent are much less likely to work in generics, metal forgings, call centres, or simple analytics jobs.

This unique situation has an interesting second-order effect: innovation flourishes in what were previously considered mature or low-tech settings. Some process innovations underlie globally competitive companies; others have the potential to be customised into products for the world, in both business and end consumer markets. The injection of intelligence thus gives India an advantage at yet another form of invisible innovation. What does this imply for policy makers and managers?

When outsourcing to Indian third parties or their own captives in India, multinational corporations (MNCs) should demand innovation rather than restrict themselves to being satisfied by cost savings. They should also scan the Indian industry in sectors that are attractive in India but that are given up for dead in the West. In these sectors, there may be opportunities to tap into innovation developed in India. Marrying these Indian innovations with the global marketing and distribution networks of MNCs could be a successful undertaking.

Western policy makers should realise that sectors that are considered old and traditional may still have process innovation potential that may ultimately spawn new products.

Indian companies, especially outsourcing firms, should intensely examine how to exploit the injection-of-intelligence phenomenon for process innovations that can help develop new capabilities and products.

Senior managers call the company an "intellectual playground, where analytical sciences lead to profitability".

DenuoSource saw an opportunity to do more than just provide inputs to the decision. It could create an algorithmic approach to solving the problem, and the approach itself could be sold as a product.

As a result, DenuoSource developed its Location Analyzer product to turn the art of location analysis and sales forecasting into a science. This tool helps businesses such as retail chains, malls, fast-food restaurants, or real estate developers decide whether it would be beneficial to open a new store and, if so, where the businesses should place the store to increase their chances of success. Geographical sales, store characteristics and demographics get plugged into the software, which returns a scorecard of the different locations and their relative strengths. The Location Analyzer also helps businesses determine whether remodelling or relocating existing stores would be worth the time, effort and expense. Such information is critical; research shows that retailers lose millions on remodeling efforts, considering that remodelling can cost $10 million to $15 million per store. With its unique approach to integrating GIS (geographical information system) data with store and demographic data, DenuoSource provides valuable insight for decisions about a given site.

Turning services into products

Despite their different industries and products, the 24/7 Customer and DenuoSource stories have several features in common. In both cases, the firms' primary business was to provide outsourced services to clients. Both companies found innovative ways to meet the needs of their clients, with the understanding that this improvement in delivering services could also be customised into actual products. That is, 24/7 Customer and DenuoSource created novel IP and new product lines.

Remarkably, 24/7 Customer, a call centre company, was one of the first firms to realise the opportunity in, and develop the capabilities for, the delivery of extremely high-end predictive analytics capabilities. The 50 staff members who work on predictive modelling solutions in the company's iLab unit include mathematicians, statisticians, process experts and analysts. They represent a mix of PhDs and MBAs, and nearly all have undergraduate degrees in mathematics, physics, computer science or engineering. And they happily file patents for their innovations! None of these descriptors is typical of a call centre company in the West. As this example shows, the services outsourcing sector in India is particularly receptive to an injection of intelligence into fairly standardised, commodity-like services, because of the higher margins and employee qualifications that characterise such Indian companies in comparison with their Western counterparts. It is not unusual to find people with high-level degrees taking calls, and the CEOs of such companies tend to be extremely tech-savvy (as is 24/7 Customer's Kannan, undoubtedly; his previous venture was a software company that he sold to Siebel Systems). This picture creates a stark contrast with the high school dropout stereotype of call centre employees in the West.

Although DenuoSource is an intrinsically higher-skill business model (analytics), the amount of initiative an analytics services provider can take to serve its clients varies. The company's self-conscious positioning at the higher end of this spectrum is clearly evident in its communications to potential hires. Senior managers call the company an "intellectual playground, where analytical sciences lead to profitability". The routine and monotonous work associated with larger analytic outfits cannot fit this description, but the variety of DenuoSource's clients and their complex, distinct business problems help retain and motivate its human resources. The company believes that this variety leads to reduced labour turnover and attrition, which can also ultimately mean lower costs. ◻