

Innovation blowback: Disruptive management practices from Asia

Western companies think too narrowly about the emerging world. If they aren't careful, they may end up as defenders, not attackers.

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In the days of the rudimentary pistol, unlucky shooters were now and then hurt when unburned gunpowder escaped backward toward their faces. They came to describe this unpleasant experience as "blowback," a term that has subsequently gained wider application in military affairs—to any event that turns on its maker.

Blowback is an apt term for the unexpected consequences of the investments that Western companies have made in emerging markets. Since first entering them several decades ago, and to a remarkable extent today, these companies have tended to view them in what Kenneth Lieberthal and C. K. Prahalad¹ call "imperialistic" terms: as a beguiling mix of increasingly prosperous consumers and limitless pools of low-cost labor. Here, the thinking goes, companies can expect to harvest the fruits of the R&D and innovation skills painstakingly developed in their home countries.

That view is dangerously complacent. The very presence of Western intruders and the competition they create have inspired the emerging world's companies to raise their game in response. Far from being easy targets for exploitation, emerging markets are generating a wave of disruptive product and process innovations that are helping established

¹Kenneth Lieberthal and C. K. Prahalad, "The end of corporate imperialism," *Harvard Business Review*, August 2003, Volume 81, Number 8, pp. 109–17 (www.hbr.com).

companies and a new generation of entrepreneurs to achieve new priceperformance levels for a range of globally traded goods and services. Eventually, such companies may capture significant market share in Europe and the United States.

To be sure, these trends are in their early development, and most companies in emerging markets face formidable obstacles to competing effectively at home, let alone penetrating the developed world. Furthermore, most Western companies haven't yet begun to serve the emerging world's low-income segments, where crucial learning takes place. Even so, early indications suggest the "innovation blowback" from emerging markets could come soon:

- Wal-Mart Stores' imports from China already account for 1 percent of its GDP. Along with other value-conscious retailers, the company stands ready to help a new breed of manufacturer target its wares at shoppers in the United States and Europe.
- Citigroup's Chinese M&A unit reports that outbound deals make up the lion's share of its pipeline—a sign that companies in China are moving abroad.
- Still more significant, mounting evidence suggests that farsighted vanguard Western companies are not only acquiring key capabilities by serving low-income customers in emerging markets but also preparing to use that experience to attack the growing value segments of developed markets. These companies, wielding advantages based not on factor cost differences but on superior management, show that blowback is as much an opportunity as a threat.

Most of the developed world's companies must urgently reposition themselves to deal with this offshore challenge. The solution isn't just to bring their products and business practices to the developing world, where they will invariably fail to penetrate beyond small segments of relatively affluent consumers and miss out on the vast purchasing power of less affluent ones.² Nor can Western companies simply strip costs from existing products. They must instead redesign their products and processes from a "clean-sheet" perspective—one that amplifies their own distinctive capabilities and those of other companies—by participating in and orchestrating networks of highly specialized businesses. In fact, they can acquire the capabilities they will soon need at home only if they face the intense competitive pressures of serving the mass market in emerging economies.

²Dell, which in the United States epitomizes innovative production processes, admitted as much when price competition from local companies forced it to retreat last August from its efforts to sell low-cost consumer PCs in China.

Emerging-market hotbeds

Emerging markets are well known for their role in activities such as assembling consumer electronics products and providing low-level customer support through burgeoning call centers. They will become even more significant as catalysts for product and process innovation.

Two powerful factors are converging to transform them into catalysts of this kind. One is the low incomes of consumers in China and India—a total of 457 million households in 2002, with an average annual income of less than \$6,000 a year. The other is the spending behavior of this immense group of consumers, who, by Western standards, are unusually youthful, demanding, open-minded, and adventurous. One study cited by Lieberthal and Prahalad, for instance, showed that Indian consumers sample an average of 6.2 brands a year of a given consumer product for every 2.0 brands their US counterparts buy.³

These demographics and consumer traits set a stern precedent. To penetrate this vast market, companies must charge prices that the majority of its consumers can afford. Furthermore, the climate of openness implies diminished loyalty to established brands and greater receptiveness to new participants and product features. Both will force companies to rethink the way they develop and deliver their offerings.

Mobile technology demonstrates both the opportunity and the challenge. China and India, thanks to their army of early adopters, have become two of the world's largest markets for mobile phones. But these markets differ from Western ones in important ways. According to Mouli Raman, the chief technology officer of OnMobile, an entrepreneurial company spun out of Infosys Technologies three years ago, the cost of equipment for mobile-telephone networks must fall by a factor of five for it to succeed in the Indian market. Pricing for mobile-network operators must also be restructured, with smaller up-front license fees and more emphasis on performance-based payments.

Established technology vendors such as Nokia or Sony Ericsson must decide whether products designed for more developed countries will succeed if merely adapted for Asia's emerging markets or a radical new approach to product and process design is required. A growing number of such companies now acknowledge that going back to the drawing board is the only choice in Asia. Products like mobile phones comprise many interdependent systems and subsystems. When the products are designed, their features require trade-offs and agreements about diverse systems

³Kenneth Lieberthal and C. K. Prahalad, "The end of corporate imperialism," *Harvard Business Review*, August 2003, Volume 81, Number 8, pp. 109–17 (www.hbr.com).

and components. Companies that attempt, say, to incorporate fewer features find that the second-order effects ripple across these previous trade-offs and agreements.

The new models to follow

As Western companies strip costs from their products, they will have to rethink the processes they use to design and deliver their offerings. Many will discover that their home-market organizations are no longer the primary locus of innovation. Big global companies, after specifying the performance parameters they expect, may outsource the innovation process entirely. Contrary to the belief that multinationals must enter the emerging world in a vertically integrated fashion to ensure quality, they may begin to *disintegrate* vertically there—not just to assembly but all the way to product design. To some Western executives this might seem like a radical notion, but the practice of outsourcing innovation is gaining ground. Gateway and Hewlett-Packard, for example, recognizing that they couldn't move quickly into consumer electronics markets, have turned to original-design manufacturers in Asia for their new consumer product offerings.⁴

Companies have many ways to manage product and process innovation in emerging markets, but three are especially promising. Although presented separately, they are not mutually exclusive; a company can amplify the impact of its own capabilities, and deliver greater value at much lower cost, by combining them. The first approach is described through a cautionary tale about how Japanese motorcycle makers went to China only to get beaten at their own game. But like the cases illustrating the other approaches, this one also describes an opportunity for Western companies: to turn blowback to their advantage by building distinctive capabilities in the low-income segments of emerging economies before other companies do.

Production-driven modularity

Few Westerners could find Chongqing on a map. Yet this central Chinese city is home to a network of companies whose vibrant new way of designing and manufacturing motorcycles is a prototype for disruptive innovation. The network uses a distinctive management process that economists at Tokyo University, who have studied such networks in great depth, call "localized modularization"—a loosely controlled, supplier-driven approach that speeds up a company's time to market, cuts its costs, and enhances the quality of its products. The heart of this new system is a series of "process networks" mobilizing specialized companies across many levels of an extended business process. Entrepreneurial and privately owned motorcycle assemblers

⁴John Hagel III, "Offshoring goes on the offensive," *The McKinsey Quarterly*, 2004 Number 2, pp. 82–91 (www.mckinseyquarterly.com/links/15773).

such as Dachangjiang, Longxin, and Cixi Zongshen Motorcycle orchestrate the networks.

These companies got their start by competing against established stateowned assemblers that had partnered with leading Japanese motorcycle makers such as Honda Motor, Suzuki Motor, and Yamaha. The private assemblers refined the Japanese companies' tightly integrated product

The Chinese system lets assemblers modularize production in parallel by **outsourcing work** to suppliers

architecture into one that was more flexible and modular but just as functional. The Chinese system makes it possible for the assemblers to modularize production in parallel by outsourcing components and

subassemblies to independent suppliers. In contrast to more traditional, top-down approaches, the assemblers succeed not by preparing detailed design drawings of components and subsystems for their suppliers but by defining only a product's key modules in rough design blueprints and specifying broad performance parameters, such as weight and size. The suppliers take collective responsibility for the detailed design of components and subsystems. Since they are free to improvise within broad limits, they have rapidly cut their costs and improved the quality of their products.

Locating major suppliers and assemblers in the same city helps to mobilize the appropriate specializations. Informal social networks, developed in crowded teahouses and restaurants, supplement more formal efforts to coordinate suppliers and assemblers. Throughout India and China, such emerging local business ecosystems play a major role in speeding up product and process innovation. In this production-driven form of modularization, suppliers of components and subassemblies—the frame, the engine, the suspension—take much of the responsibility for coordinating their work. Solving problems by combining people from diverse fields makes the solution more creative.

Thanks to these innovations, China has made rapid gains in motorcycle export markets, especially in Africa and Southeast Asia, and now accounts for 50 percent of all global production of motorcycles. The average export price of Chinese models has dropped from \$700 in the late 1990s (already several hundred dollars less than the cost of equivalent Japanese models) to under \$200 in 2002. The impact on rivals has been brutal: Honda's share of Vietnam's motorcycle market, for instance, dropped from nearly 90 percent in 1997 to 30 percent in 2002. Japanese companies complain about the "stealing" of their designs, but the Chinese have redefined product architectures, in ways that go well beyond copying, by encouraging significant local innovation at the component and subsystem level.

It isn't all upside for the Chinese. Price competition has eroded the profit margins of both assemblers and suppliers, jeopardizing their ability to invest in further product innovation. Some consolidation by assemblers—plus a move into marketing and service—seems likely.

Customer-driven modularity

Over the years, consumer packaged-goods companies have reduced their products' unit size in emerging markets to unlock demand among consumers who can't afford bigger portions. Coca-Cola, for example, began selling 200-milliliter bottles of Coke in India in 2003; Britannia launched Tiger Biscuits in 20-gram packages in 1999. What if companies took this approach with more expensive purchases, such as mobile phones, or even with products for low-income businesses?

Cummins, the producer of diesel engines and power generators, recently did just that in India. By modularizing a product for the distinct needs of different kinds of customers and channel partners, the company cut the total cost of ownership and of sales in the channel. The result: higher demand for Cummins products.

How Cummins did it. By 2000 the company had already captured 60 percent of the high-horsepower end of the Indian market. But it was only a marginal player in the large and rapidly growing low-horsepower (under 100-kilowatt) end, where buyers include small retailers, regional hospitals, and farmers requiring an assured power source in a country where outages are frequent. This big market was potentially lucrative, but its demands are daunting: each segment needs slightly different features. Farmers, for example, want engines protected against dirt, while noise is a bigger issue for hospitals. Cummins realized that it needed a low-horsepower engine that could affordably meet the needs of all these customers.

The company realized that it couldn't afford direct distribution, given the need for low prices. Instead it would have to use third-party distributors, all of them less skilled than its direct sales force and less able to help customize the product for the needs of particular end users. The solution was to create a series of smaller, lower-powered, modularized engines and to combine them with add-ons called "gensets" (generation sets) that could be customized for different segments. By packaging components in ready-to-assemble gensets, Cummins broadened the product's appeal to both customers and distributors. Customers liked the gensets because the product came tailor-made; the hospital version, for instance, had a noise-abatement hood that was omitted from the farm kit, which had dust and dirt guards not included in the hospital version. Gensets also appealed to

distributors because they didn't have to source these add-ons themselves—something that would have been beyond their means and skills.

Modularizing the product to meet the needs of customers and channels also helped solve operational dilemmas. Customized products ordinarily mean smaller manufacturing runs, so Cummins faced an increase in the average unit cost of production for an offering that had to be cheap. By modularizing it, the company increased production runs of common subsystems and components, thus keeping overall costs low. It also pressed suppliers of peripherals, such as the noise-abatement hood, to standardize designs and cut costs.



Compared with the radical process innovations of the Chinese motorcycle assemblers, which outsource more of their core production, Cummins's strategy may seem familiar (see sidebar, "Beyond big bang innovation," on the next page). Western companies, after all, have long grappled with customization and "segment-of-one" challenges. Yet these efforts often end at the factory door. When modularization reflects only the need to cut manufacturing costs—rather than the problem of reaching small, dispersed segments of low-income customers through third-party channels—it typically fails to cut the cost of ownership for customers and the cost of sales in the channel.

Beyond India. The new genset engines have been an unqualified success in India, where Cummins has won 40 percent of the market over the past three years. Genset sales now account for 25 percent of the company's total power generation sales there. Despite the much lower unit prices of the new range, its net profitability is comparable to that of the high end. Exports began in 2002 to other parts of Asia and were later extended to Africa, Latin America, and the Middle East. Can it be long before Cummins introduces its low-horsepower generators in more developed markets?

If it does, it could leverage another advantage derived from competing in Asian mass markets: the high levels of reliability it had to design into the engines not only because its customers can't depend on the local power supply but also because the low prices they demand mean that its margins can't sustain an after-sales service unit. This higher reliability could prove competitively devastating in developed countries, where many vendors have competed away margins on their products and now depend on profitable

aftermarkets. An attacker selling products that don't require after-sales service could dry up that profit pool.

Process-driven services

Innovation in emerging markets won't be limited to manufactured goods. The desire to reach vast low-income segments of Asia's population is also pushing service organizations to new levels of achievement. One vivid example comes from the Aravind Eye Care System, at Madurai, in the south Indian state of Tamil Nadu. The Aravind system—dedicated to eradicating "needless blindness by providing appropriate, compassionate, and high-quality eye care for all"—includes a chain of hospitals and a manufacturing center for sutures, synthetic lenses, and eye pharmaceuticals.

Aravind, which occupies a highly specialized health care niche, developed efficient processes by treating huge numbers of extremely poor patients in a country where 12 million people are totally blind and an additional

Beyond big bang innovation

When Western executives discuss innovation, they tend to focus more on products than on processes and mostly on breakthroughs rather than incremental product innovations. Supercomputers, blockbuster pharmaceuticals, fuel cells, nanotechnology, lasers—innovations like these capture the imagination and attention of executives in developed countries.

Yet very few companies create significant shareholder value through breakthrough product innovations; most economic wealth comes from more modest ones that accumulate over time. Process innovations may be even more important for building competitive advantage and generating wealth. Dell and Wal-Mart Stores, for instance, have used them to generate enormous amounts of it.

In fact, most innovation involves creatively recombining existing components of technologies, products, or business systems. Schumpeter's "gales of creative destruction," for example, came not from isolated, discontinuous events but rather from ongoing efforts by entrepreneurs to find better ways of serving markets. Silicon Valley—for many, the epicenter of innovation—generates most of its economic wealth by incrementally enhancing technology.

If executives expand their view of innovation, they may be better prepared to see it in terms of institutional capacity and pace. For example, developing a more modular and loosely coupled product architecture—as Cummins and the Chongqing motorcycle assemblers did—increases the institutional capacity for innovation and thus promotes incremental improvement. Specialization, as in the example of the Aravind Eye Care System, helps an organization develop innovative processes more rapidly by providing it with lessons from a larger number of comparable experiences.

More important still, a broader view of innovation that values the role of incremental change communicates the power of bootstrapping.

Companies that start out with limited capabilities—such as those in many developing economies—can rapidly build them over time through a series of modest process and product innovations. Ultimately, individual innovations may matter less than the institutional capacity to sustain a rapid series of improvements and the pace at which they are developed and disseminated through the network.

8 million are blind in one eye. Its hospitals perform 200,000 operations a year—nearly 45 percent of all such operations in Tamil Nadu and 5 percent of those throughout India. High volumes are dictated by the affliction's scale and by the need to make the network's nonprofit hospitals viable and to generate funds for expansion.

Over the years, Aravind has carefully honed the flow of work through its outpatient departments and surgical wards—and both have reached impressive levels of efficiency. Cataract operations in Madurai, for example, are performed on four operating tables, side by side. Two doctors operate, each on two adjacent tables. When the first operation is over, the second patient is already in place. "Usually I do about 25 surgeries in a half-day session," a local doctor told the Indian writers of a case study. "Most [doctors] do this number." The intense throughput doesn't seem to compromise quality. Indeed, major complication rates are highly satisfactory: in virtually all "event" categories—such as iris trauma or prolapse—Madurai's 2002 figures were better than those of the United Kingdom (as documented in a national survey by the Royal College of Ophthalmologists).

In this case, too, the need to serve low-income customers in challenging conditions spurred innovation. People in rural areas, for example, suffer from refractive blindness resulting from the prohibitive time, travel, and other incidental costs of getting a pair of glasses. Aravind studied data on the needs of patients, prepared lenses in advance, and set up mobile optical shops in remote villages so that patients could be examined near where they live and, if necessary, supplied with glasses on the spot.

Other Indian health care entrepreneurs, using processes developed in similar conditions, are already encouraging patients in more developed countries to get better value for money by traveling to Indian facilities for specialized services. Institutions such as the Narayana Hrudayalaya Foundation (a cardiac care facility in Bangalore) and Escorts Heart Institute and Research Centre, in New Delhi, are proving that services, though intangible, can be delivered in a surprisingly flexible way. A recent study by the Confederation of Indian Industry (CII) and McKinsey predicted that medical tourism in India could generate \$2 billion a year in revenues by 2012.

The implications for Western companies

These models of innovation spell out a clear message for many companies in the developed world: if you're not participating in the mass-market segment of emerging economies, you're not developing the capabilities you will need to compete back home. Our first recommendation to Western companies is

⁵ Sankara Manikutty and Neharika Vohra, "Aravind Eye Care System: Giving them the most precious gift," Indian Institute of Management case study, Ahmedabad, India, 2003 (revised 2004).

therefore to go offshore, not just to the affluent segments, and not just for wage cost differentials, but to serve the mass market. Only there will you be forced to innovate in the ways required to succeed in the future. The recommendations that follow build on this basic idea.

Specialize

It was Adam Smith who first noted the power of division of labor to increase productivity—the basis of the "dynamic economic theory" laid out in *Wealth of Nations*. As the economist Brian Loasby⁶ points out, the power of specialization follows not from specialization itself but from the new capabilities it promotes. Viewed in this way, it becomes dynamic rather than static; it enhances incentives and opportunities for further innovation.

Companies can't have all the skills needed to deliver products or services; they must choose what they do themselves and collaborate with others for the rest. They should stick to one of three types of activities: managing infrastructure, managing customer relationships, or developing and commercializing innovative products. Specialization requires businesses to find partners that enhance and complement their capabilities. Such cooperation calls for the better coordination of resources across and within enterprises as well as a fresh approach to managing processes. Offshoring in emerging markets accelerates the building of capabilities on a global scale by helping companies to participate in talent-rich process networks and then to orchestrate them.

Orchestrate process networks

Companies can best accelerate the building of capabilities in two stages. The first involves setting up, accessing, developing, and ultimately orchestrating true process networks of the kind used by the motorcycle makers in Chongqing and, in the apparel industry, by the Hong Kong-based company Li & Fung, which deploys a network of 7,500 specialized business partners to create customized supply chains for each new apparel line. Such process orchestrators decide which companies can participate in the network, define each party's role, and guarantee performance and fair rewards. This gatekeeper role distinguishes emerging process networks from more fluid aggregations of companies.⁸

The results are impressive. In the case of the motorcycle network, the undertaking is divided among independent activities, each with a clear owner accountable for performance. This "loose coupling" promotes flexibility (such as quicker responses to the customer's needs) and scalability (the

⁶Brian Loasby, Knowledge, Institutions, and Evolution in Economics, London: Routledge, 2002.

⁷John Hagel III and Marc Singer, "Unbundling the corporation," *The McKinsey Quarterly*, 2000 strategy anthology: On strategy, pp. 147–56 (www.mckinseyquarterly.com/links/15776).

⁸John Seely Brown, Scott Durchslag, and John Hagel III, "Loosening up: How process networks unlock the power of specialization," *The McKinsey Quarterly*, 2002 special edition: Risk and resilience, pp. 58–69 (www.mckinseyquarterly.com/links/15777).

ability to involve the largest possible number of participants and, hence, to access a wide range of specializations). Mobilizing process networks is a formidable challenge requiring robust "performance fabrics": technologyand business-based ways of reducing the cost of interaction among network participants. Successful orchestrators such as Cisco Systems, which has invested heavily in distributed learning platforms, focus hard on one key ingredient: creating shared meanings. The ability to build trust quickly is also a part of the recipe.

Orchestrate innovation networks

Moving from orchestrating processes to orchestrating innovation is the second stage of efforts to speed up the building of capabilities. Orchestrators like Li & Fung are learning to build them more quickly across enterprise networks, not just gaining access to specialized resources. To succeed, companies must generate the friction that shapes and sharpens learning when people of different backgrounds and skills collaborate on real problems. Clear performance targets, an unconstrained environment for finding solutions, and the sharing of prototypes across organizational boundaries generally produce the most beneficial results. Processes must be developed, with the help of new generations of information technology, to ensure that innovations are disseminated across the network. As productive friction expands within it, a virtuous cycle reinforces shared meanings and trust.

Western companies go offshore for many reasons: among others, to cut wages (and thus costs), to gain access to distinctive skills that accelerate the building of capabilities, and to seek new markets.9 Too often, however, investments in new markets focus only on the affluent segments of emerging economies. By targeting instead the specific and demanding needs of lower-income consumers, Western companies can address a far bigger emerging-market opportunity and create the ability to take innovative products and services from the emerging world and use them in new categories at home.

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⁹Vivek Agrawal, Diana Farrell, and Jaana K. Remes, "Offshoring and beyond," The McKinsey Quarterly, 2003 special edition: Global directions, pp. 24-35 (www.mckinseyquarterly.com/links/15937).