CHINESE INNOVATION

Lessons from the East

By Professor Winter Nie - September 2011

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More often than not, Westerners dismiss the idea of Chinese innovation as a contradiction in terms. Indeed, the Chinese practice of “copying and improving” can blur the lines between innovation and piracy. In response to these accusations from the West, the Chinese assert – albeit tongue-in-cheek – that students must first learn to copy the master’s work before they are able to develop their own style. After all, if you are not very good at something, you’ve got to start somewhere.

The rapid increase in China’s competitiveness in the high-speed rail, ship-building and even aviation and automotive industries caught some Western observers by surprise. Less than a decade ago, for example, China’s rail system was woefully inadequate. Today it boasts more kilometers of high-speed rail lines than Europe, as well as the world’s fastest trains (350 km/hour) in regular commercial service. However, despite the considerable increase in its R&D output in some sectors, Chinese industry still lacks basic research and radical innovation. Nonetheless, there is still a strong desire among Chinese people to experience the benefits of innovative technologies created in the West; the “me-too” phenomenon is a strong driver in the pursuit of new product development.

The Chinese are innovating in a uniquely Chinese manner and consequently rising as formidable challengers to traditional multinational companies, as seen in the transport industry. Up against the tough competition and volatile conditions in emerging economies, any company doing business in China might do well to take a leaf or two from the local champions’ book.

In my research, I have found four interesting features regarding the manner in which the Chinese innovate: innovation on-site, innovation to reduce costs, tailored innovation and rapid product innovation.

Innovation on-site, not in the lab

Due to the customized nature of its equipment – used among many other applications to personalize buttons, cut patterns in leather, mark computer keyboards or engrave glass – Han’s Laser could not test its products in-house extensively. In the early days, the company would send a technician on-site for several months and file a machine performance report every day. When problems arose, the field technician worked closely with the R&D team at headquarters to find solutions to rectify them immediately. These improvements were systematically incorporated in the next new version. Between 1996 and 1999, the company made over 3,000 improvements to its machines.

Testing on-site made the client’s factory a research lab, reduced the time to market, and helped with the company’s cash flows. When the new model was finally released, it incorporated the client’s precise needs. No more, no less.

Innovation with a focus on costs

When China International Marine Containers (CIMC) imported a production line from Germany in the early 1990s, it had a capacity of about 10,000 containers a year. Over the next five years, CIMC technicians fundamentally reengineered the manufacturing process four times, applying technology borrowed from the auto industry. By 1996, production had risen twenty-fold and CIMC was the global leader by volume, manufacturing almost one in every five new containers worldwide. The following year, it was able to set up its own R&D center, where it managed to find a way to replace the expensive aluminum used in refrigerated containers with much cheaper treated steel. It licensed steel-treatment technology from German manufacturers and improved performance to the point where treated steel could match the performance of aluminum. As a result, it increased its equipment capacity and capability to become more cost efficient.

Similarly, the fixed costs for the production of solar panels are considerable. However, one Chinese company I interviewed focused on process innovation to lower the capital expenditure. While solar panel equipment suppliers normally provide “turn-key” solutions which can be extremely costly, this

company identified the key components/subassemblies that it could not make in-house and bought them from Western suppliers. It then streamlined the non-critical parts by either developing its own equipment and technology or working with local suppliers. As a result, its capital expenditure was reduced by two-thirds. This is perhaps one of the most common innovations Chinese companies use to reduce costs.

Product features and functions tailored to local requirements

Chinese consumers use their mobile phones for many purposes, including playing music in public places and watching television. With this in mind, mobile phone producers in China cater to these needs by offering features such as handsets that contain six to eight speakers for playing audio or talking in noisy spaces. Not only are phones available at half the price of those offered by traditional market players such as Samsung, but they also provide features to address the unique needs of local consumers.

Another example of local customization comes from the Chinese home appliance manufacturer Haier. When a rural customer in China's Sichuan province complained that his Haier washing machine kept breaking down, service technicians found the plumbing clogged with mud. It turned out that many rural Chinese customers were using the Haier machines – meant to wash clothing – to clean sweet potatoes and peanuts. Instead of warning customers about what should *not* be washed in the company's machines, Haier engineers modified the washer design to accommodate their needs. From then on, Haier washing machines sold in Sichuan were labeled, "Mainly for washing clothes, sweet potatoes and peanuts."

Haier's strategy of meeting localized market demand at home and abroad with innovative models resulted in about 96 product categories and 15,100 specifications. Haier executives maintained that these kinds of feature innovations were inexpensive to produce, but highly valued by customers.

Rapid product innovation

The most important quality characterizing Chinese innovation is the sheer speed with which companies introduce new products to the market. For example, before the 2008 Olympics in Beijing, Chinese mobile phone companies rushed to produce new models reminiscent of the country's iconic "Bird's Nest" stadium and "Water Cube" National Aquatics Center (*right*). In 2007 alone, Chinese mobile phone company Tianyu produced over 100 new models.

Photo: Charlie Fong, public domain

Innovating for the future

So why do Chinese companies take these unconventional approaches to innovation? Quite simply, out of necessity. Without anything like the research budgets of their more established competitors, they must operate with lean and ultra-dynamic strategies; likewise, without a brand identity to protect, they have nothing to fear by allowing the customer to test the product. They win some, they lose some. And in the ever-changing market environment in China, this nimble method is very effective and, most importantly, cost efficient.

However, there is a downside to this purely entrepreneurial approach. As Chinese companies mature, they will want to begin thinking about developing globally recognized and successful brands. In order to innovate like Apple, Google and other highly creative Western companies, China must proactively invest more in R&D, which consequently requires the strict protection of intellectual property rights.

In the meantime, multinational competitors would be wise to take note of domestic Chinese companies' innovation techniques for mass markets because, as many have already discovered, Chinese companies are learning fast. As recently as 2001, China lagged behind in the world of supercomputing. Of the sites that qualified for the prestigious Top 500 list, a ranking of the world's fastest supercomputers, not a single one was Chinese. However, fast forward a mere decade and 61 of those top 500 are located within China, two of which are in the top five!

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