ANDY YEE

OUT OF THE BOX

Japanese companies are not yet ready for the next industrial revolution

The digital disruption wave has finally hit the factory floor. Introduced by Germany in 2013 as "Industry 4.0" to promote the digitization of manufacturing, the concept of a Fourth Industrial Revolution has caught on among manufacturing powers. The U.S. brands its strategy the "Industrial Internet." Japan, too, has jumped on the bandwagon with its "Industrial Value Chain Initiative."

The possibilities of transforming physical products with digital capabilities are limitless. Countries that lead this change will make significant gains. U.S. networking company Cisco estimated that the "internet of things," the growing network of digital devices that communicate with each other, will create $14.4 trillion in global corporate profits between 2013 and 2022.

With its history of technology and innovation, Japan would seem well positioned to lead in this area. However, the internet economy's concepts of service and ecosystems are alien to Japanese manufacturers, steeped in their success during the Third Industrial Revolution. The problem is not technology, but mindset.

One issue is the shift from products to services. With 21 billion products set to be wirelessly connected by 2020, the enormous amount of data generated will form the basis for new services. Networked production systems will enable mass customization, offering manufacturers the flexibility to respond to personalized needs, and making things matter less and knowing your customers matter more.

"We're moving from a push-driven model to a pull-driven model, with the consumer becoming much more of a driver," said Jagjit Singh Srai, head of the University of Cambridge's Centre for International Manufacturing.

Japan's record in services transformation is dismal. The country is known for its single-minded *monozukuri* craftsmanship culture, but this linear thinking makes it difficult to adjust to a customer-centric model emphasizing software and services.

A case in point is Japan's electronics industry, whose share of information and communication technology exports among Organization for Economic Cooperation and Development members fell from 20.6% in 1996 to 12.1% in 2008. According to the World Bank, services accounted for 5% of global information and communication technology value creation in 1996 and 22% in 2009. Yet services made up less than 2% of such exports from Japan in 2009.

NETWORKED PRODUCTION In the internet economy, companies thrive when others create services and applications on top of their platforms. In industry, networked production platforms will democratize manufacturing for countless smaller companies. The biggest winners will be the incumbents that offer these platforms.

Because of the need to interact with many players, such platform thinking calls for an ecosystem mindset that spans borders, industries and cultures. This will not come easy to Japanese incumbents. Their dominance has often relied on proprietary technology and a "black box" approach, and they operate within *keiretsu* networks of interlinked companies that favor familiar partners. This strategy is a poor fit for the internet era, which stresses openness, diversity and dynamism.

The emerging innovation model will be globally collaborative, with customer insights, product ideas, talents and strategic allies coming from all over. Japan has been slow to embrace this. A recent survey of 300 experts from manufacturing companies and technology suppliers by the consultancy McKinsey showed that only 34% of Japanese respondents felt well prepared for Industry 4.0, versus 83% of those in the U.S. and 57% in Germany.

While Japan leads the world in robotics and automation, the internet paradigm rewards features where its advantages are less salient: customer-driven innovation, digital services, global collaboration, information sharing and open standards.

The Fourth Industrial Revolution is about connectivity and networking. Japanese companies need to urgently equip themselves with soft skills and a global mindset in order to survive. The government, too, has an important role to play. A labor market that is attractive to foreign talent, a more open education system, greater English proficiency and stronger computer science education are needed to nurture Japan's future globalizers.

Japanese companies need to escape the constraints of their previous model. If they prove capable of embracing disruptive change, the Fourth Industrial Revolution will not be the beginning of the end but the end of the beginning of Japan's industrial renewal. **N**

Andy Yee is the public policy director for Visa for greater China and was previously an Asia-Pacific public policy analyst at Google. This article expresses only the author's personal view.

PHOTO: Workers assemble LCD televisions at a Sharp plant in Tochigi Prefecture, Japan.