Outsourcing Tech Manufacturing May Hurt U.S. Firms' Innovation

FRONT PAGE NEWS
By: Patrick Seitz, December 1, 2008

When U.S. companies began outsourcing electronics manufacturing to Asia, they believed they would maintain their competitive edge by keeping the high-value design and technology innovation work at home.

But increasingly, the design and development of new electronics products are occurring across the Pacific, most notably in Taiwan.

For instance, the hottest new category of personal computers -- low-cost, Web-enabled mini-notebook computers called "netbooks" -- sprang up from companies based in Taiwan, not the U.S.

Taiwan's Asustek, best known for making motherboards for personal computer companies, leads the nascent netbook category with its Eee PC mini-notebook.

Also, one of today's most talked about smart phones is the G1, known as the "Google phone" because it uses an operating system developed by Google GOOG. The G1 is produced by Taiwan's HTC.

Developments in flat-panel TVs, digital cameras, high-definition video players and other electronics products are coming more from Asia, where they're manufactured, and less so from the U.S.

The U.S. long ago ceded manufacturing of consumer electronics to Asia, and now product R&D and innovation are following suit, some tech industry veterans argue. The loss of U.S. tech manufacturing is hindering American companies' ability to innovate, says Richard Elkus, a Silicon Valley tech executive and author of the book "Winner Take All: How Competitiveness Shapes the Fate of Nations."

"If you lose your manufacturing, you lose your R&D, and you absolutely will lose your ability to create, because if you can't commercialize a product, you don't even know what's possible," Elkus said in an interview.

Others say outsourcing electronics manufacturing is nothing to worry about. U.S. officials have wrung their hands over the loss of tech factory jobs for years, but the country has continued to prosper. The U.S. has shifted its focus to software and Internet services in the last decade, keeping overall high-tech employment stable.

Outsourcing is a natural result of the global economy and free market competition, says Kathy Gornik, president of Thiel Audio, a U.S. maker of high-end stereo speakers. It forces U.S. companies to be more creative and innovative, she says. (See sidebar.)

New gadgets and lower prices benefit consumers worldwide.

The U.S. also still leads in personal computers with Microsoft MSFT, Intel INTC, Hewlett-Packard HPQ and Dell DELL tops in software and hardware.

Still, consider some recent product innovations from Asian tech firms. Toshiba developed NAND flash memory, a key part of smart phones and MP3 players. Sony SNE led the development of the Blu-ray Disc, the high-definition optical storage media for movies and other content. Sony and Toshiba teamed with IBM IBM to create the Cell microprocessor. It's now used in Sony's PlayStation 3 video game console, but also could find its way into a host of new devices.

"The Cell processor could be Asia's answer to Intel and AMD AMD," Elkus said.

U.S. policymakers should worry about the erosion of tech manufacturing, says Richard Lester, a professor at the Massachusetts Institute of Technology and director of MIT's Industrial Performance Center.

Pennywise, Pound Foolish?

Many U.S. firms have benefited from low-cost manufacturing in Asia, but there may be a long-term price to pay, Lester says. By offshoring manufacturing, U.S. tech companies have given foreign firms the skills to compete with and potentially surpass their customers, he says.

"I don't think we're nearly as strong as we've tended to think we are," he said. "Partly because other parts of the world are getting stronger."

The fostering of worthy rivals abroad might be even more impactful than the loss of U.S. tech manufacturing, says Jason Dedrick, a senior research fellow at the Center for Research on Information Technology and Organizations at the University of California, Irvine.
"I don't think we're losing our ability to innovate," Dedrick said. "What we're getting is some companies in Asia that are gaining the ability to innovate by working with U.S. or other companies."

Taiwanese and Chinese companies like Acer, Asustek, HTC and Lenovo are becoming global competitors, Dedrick says. As customer preference has shifted from desktops to notebook PCs, contract manufacturers in Taiwan like Quanta and Compal have gained in stature.

One-time PC king Dell, which reigned during the desktop PC boom with its direct sales, build-to-order business, has fallen on hard times. It recently closed its desktop PC factory in Austin, Texas, and may sell its remaining plants and outsource all manufacturing. Contract manufacturers today build its notebook PCs.

Thinking Small

One reason notebook PCs are built in Taiwan and China is because manufacturers there have learned how to pack so much capability in small, thin and light devices. Cramming displays, batteries, antennas and other components into ever-shrinking laptop cases is no easy task.

Quanta and Compal have developed specialized technical know-how in areas critical to notebook performance, such as battery life, heat dispersion, rugged mechanicals, and electromagnetic interference, Dedrick says.

Motorola invented the cell phone, but has seen its market share wither in the last few years. The Schaumburg, Ill.-based company now is considering selling off its mobile phone unit. The two biggest handset makers today are Finland's Nokia NOK and South Korea's Samsung.

Palm PALM, the smart phone and handheld computer pioneer, is mulling a sale of its hardware division to a Chinese company, according to Trip Chowdhry, an analyst with Global Equities Research.

While many U.S. firms employ engineers and designers to work closely with manufacturers in Asia, it's not the same as having product innovators at domestic, company-owned factories, some experts argue.

"Not everything can be done at a distance," Lester said.

The sustainability of a tech product business depends on having at least some manufacturing close by, he said. Lester is co-author of "Made in America," the 1989 book that first sounded the alarm about the loss of U.S. tech manufacturing expertise.

"You don't have to have all your plants in the U.S.,” Elkus said. "But you have to have enough manufacturing capability that you know exactly what is possible, and it advances the state of your technological capability."

Japanese consumer electronics firms have moved much of their manufacturing to Taiwan and China to cut costs, but have kept a core manufacturing base in Japan, he says. That gives them enough capability "so they're still in the game," Elkus says.

If someone in the U.S. comes up with a great idea for a consumer electronics product, he or she has to go to Asia to get it commercialized, Elkus says.

Apple Remains Innovator

But Apple AAPL has thrived by outsourcing manufacturing while continuing to innovate. It's focused on things that can't be easily imitated, such as software and user interface for its iPods, iPhones and Mac computers, Dedrick says.

The U.S. produces very few consumer electronics products today, mostly high-end stereo speakers, headphones and accessories. However, some U.S. companies make components for devices like flat-panel TVs. Applied Materials AMAT, Corning GLW and IBM make parts for HDTV sets. Dedrick says.

Industry officials and academics think the incoming administration of President-elect Barack Obama has an opportunity to foster an environment that could create more tech manufacturing in the U.S.

What Would Obama Do?

Obama has pledged to spend tens of billions of dollars on science and tech research and clean energy technology. He also wants to establish a permanent tax credit for corporate research and development.

"Obama understands the tech industry," said Christopher Hansen, CEO of AeA, the nation's largest association representing the electronics and information technology industry. "He is very sensitive about trying to make sure that we don't lose our manufacturing base in this country."

The Internet and the Global Positioning System are two examples of government-funded projects that helped create major domestic industries, Hansen says.

The Obama administration needs to decide which industries and technologies are strategic to the country and find ways for the federal government to assist them, Elkus says. That could include tax breaks for companies that keep tech manufacturing facilities in the U.S., he says.

The federal government could create a favorable climate for Asian manufacturers to partner with U.S. companies and build plants in the U.S., Elkus says. Bringing high-definition TV manufacturing to the U.S. should be one priority, he says.
Obama also should make it easier to retain foreign citizens educated in engineering and other technical fields in the U.S., Hansen says.

Asia Rules Tech Production

North Asia and Southeast Asia together will get 49% of the $223 billion in consumer electronics manufacturing revenue worldwide this year, according to research firm IBIS World. North America's share will be about 4%.

North Asia and Southeast Asia will account for 64% of the $514 million in global computer hardware manufacturing revenue this year. North America will account for 12%.

Tech manufacturing is critical to the economy and security of the U.S. today, AeA's Hansen says.

"Technology is the largest merchandise export sector for the United States. It's 18% of all U.S. exports. It's significant," Hansen said. The U.S. still leads the world in such tech sectors as defense electronics and electro-medical equipment, he says.

But the U.S. lost 30% of its high-tech manufacturing jobs from 1998 to 2007, AeA said. The industry still employed 1.29 million last year, but that likely has fallen significantly this year in light of tech job cuts related to the recession.