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# The Global Innovation Migration

## As more U.S. companies send their sophisticated R&D offshore, America must provide worker retraining to maintain its tech leadership

By Vivek Wadhwa

Research and development is increasingly going global, according to a new report by Duke's Offshoring Research Network (ORN). More than half of U.S. companies now have corporatewide initiatives to outsource innovation activities, up from 22% in 2005, according to the ORN, which has been tracking the growth of outsourcing since 2004. And of those companies already offshoring development, 60% intend to do so more aggressively.

The days when you could trace development of the majority of the world's innovative technologies back to U.S. labs are fading fast. Outsourcing of R&D is irreversible. Still, the U.S. retains key advantages and remains well-positioned to continue its technology leadership. But that can happen only if as a nation we recognize the changing role of R&D and refrain from wasting scarce resources trying to recapture a bygone era. Mandating that R&D traditionally performed in the U.S. should stay in America would tie the hands of companies at precisely the time they need flexibility to compete against up-and-coming foreign competitors.

First, we need to understand what is driving the shift. While cost savings are the strongest motivation, companies are also going abroad to tap global talent pools and to be closer to growth markets. Some of the biggest U.S. companies now get most of their revenue from abroad. Hewlett-Packard (HPQ) gets 69% of its revenue from outside the U.S., and Caterpillar (CAT) gets 67%. IBM (IBM) gets 63%, while Intel (INTC) and Pfizer (PFE) each generate 57% of sales from foreign markets.

### HIGHER-END WORK

American companies are also moving major portions of their operations abroad. IBM employs nearly 100,000 workers in India, HP has 26,000, Microsoft (MSFT) has 5,500, and Cisco (CSCO) has 5,000. Pfizer employs 4,000 in China and 2,300 in India. These companies are developing some of their most sophisticated products abroad, often to target the same markets.

What's more, foreign countries are increasingly up to the task. India's outsourcing industry has moved from back office to business process to core R&D work once thought immune to outsourcing. Indian call-center operators such as Genpact are now developing processes to enhance patient care for American hospitals and reengineering financial operations for Australian banks. Top IT outsourcer Infosys is developing advanced hybrid structures for U.S. material manufacturers.

What can the U.S. do to continue to prosper in this increasingly competitive environment? First, we need to accept that R&D will now happen globally. We have to build new business models that recognize this reality. That means our companies need to be looking for innovation abroad and finding ways to bring it to the U.S.

Many Americans can scarcely find Brazil, India, and China on a map, let alone understand the key products and services being developed in those countries. Increasingly, adoption of models from foreign markets will help drive U.S. economic growth. Witness the rise of video games by companies such as Zynga and SGN. In these games, users play for free but have to pay if they want upgrades with virtual goods or to resume play at the same level where they were "killed" or to get additional life points. This model originated in China, and it has become the fastest-growing part of the U.S. video game market.

### CORPORATE WORKFORCE TRAINING

To cross this divide and internationalize our culture, we need to upgrade our education system to not only teach our

children more math and science but also geography, foreign languages, and culture. We need to make American workers more globally aware. After all, in many more cases they are going to be developing products for the world now, not just America. And they will also be looking to the world for the next great thing and how to deploy it or use it at home.

Second, midsize companies are less likely to outsource and are more likely to keep innovating in the U.S. The key to the success of these companies is technology, so we need better policies to make it easier for mid-tier players to use technology and provide them tax breaks for research.

Third, we need to recognize that globalization will disrupt industries and cause job losses in one industry while creating jobs in another. We need to upgrade our investment in workforce training and development and make these items more of a corporate priority, as ingrained in corporate culture as the idea of graduating from high school and college. We need to provide scholarships for workers to get the education to learn new skills and provide them with paid time off to attend classes. Alternatively, like many of the most innovative India companies, U.S. companies could create their own homegrown education infrastructures that cater to their own workers and allow them to continue working and learning apace. There is no one right way to approach continuing education, but ignoring the need to retool risks leaving both our workers and our economy lagging far behind in the global race for skills.

Lastly, we must recognize that we have an untapped gold mine of knowledge and innovation locked in our universities. We've invested on the order of a trillion dollars in university research over the years. Yet we have consistently failed to convert all but a tiny fraction of these lab breakthroughs into actual products and further economic activity. These early-stage ventures create the highest percentage of value per capita during the lifespan of companies. We need to harness this innovation treasure by building mechanisms to break the innovation logjam at the source—the scientists who make the discoveries, the universities that market the discoveries to the world, and the entrepreneurs with domain experience who could take these discoveries and turn them into products. At present, all three of these groups are poorly connected and poorly funded at best.

To weave better connections and create an infrastructure to encourage more lab-to-fab movement will go a long way toward ensuring that the U.S. economy continues to be the strongest and most innovative on earth. Ultimately, this could unleash a flood of companies. And that is really the end goal: forming more innovative companies based on globally applicable technology invented in the U.S.

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