

Study: There Is No Shortage of U.S. Engineers

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A new study argues that the offshoring of U.S. jobs is caused by cost savings and not a shortage of U.S. engineers or better education in China. However, the study warns that the United States is losing its global edge.

A commonly heard defense in the arguments that surround U.S. companies that offshore high-tech and engineering jobs is that the U.S. math and science education system is not producing a sufficient number of engineers to fill a corporation's needs.

However, a new study from Duke University calls this argument bunk, stating that there is no shortage of engineers in the United States, and that offshoring is all about cost savings.

This report, entitled "Issues in Science and Technology" and published in the latest National Academy of Sciences magazine further explores the topic of engineering graduation rates of India, China and the United States, the subject of a 2005 Duke study.

In the report, concerns are raised that China is racing ahead of both the United States and India in its ability to perform basic research. It also asserts that the United States is risking losing its global edge by outsourcing critical R&D and India is falling behind by playing politics with education. Meanwhile, it considers China well-positioned for the future.

Duke's 2005 study corrected a long-heard myth about India and China graduating 12 times as many engineers as the United States, finding instead that the United States graduates a comparable number.

"You had the brightest kids worrying about their jobs being outsourced. We thought, if kids at Duke were worried, then let's do a study about what's going on in education," Vivek Wadhwa, executive in residence at Duke University's master's in engineering management program and a co-author of the study, told eWEEK at the time.

"The first thing you do in a study is you look at the facts. But we couldn't find any facts. The more we dug, the more we looked, the more we discovered there were no facts," said Wadhwa.

However, Duke's 2005 study reported serious problems with the quality of Indian and Chinese bachelor-level engineering graduates, and predicted both shortages in India and unemployment in China. The current report finds these predictions to be accurate, with China's National Reform Commission reporting that the majority of its 2006 graduates will not find work. There are also oft-heard whisperings of an engineering shortage in India, though private colleges and "finishing schools" are going far to make up for the Indian deficiencies, the report said.

Yet, it is cost savings, and not the education of Indian and Chinese workers, or a shortage of American engineers that has caused offshore outsourcing, the study asserts.

"Respondents said the advantages of hiring U.S. engineers were strong communication skills, an understanding of U.S. industry, superior business acumen, strong education or training, strong technical skills, proximity to work centers, lack of cultural issues, and a sense of creativity and desire to challenge the status quo," wrote Wadhwa in the

2007 report.

"The key advantage of hiring Chinese entry-level engineers was cost savings, whereas a few respondents cited strong education or training and a willingness to work long hours. Similarly, cost savings were cited as a major advantage of hiring Indian entry-level engineers, whereas other advantages were technical knowledge, English language skills, strong education or training, ability to learn quickly, and a strong work ethic."

The report concludes by stating that outsourcing will continue to build enough momentum that the next big piece to be offshored is R&D, and that these jobs will require more Master's degrees and PhDs, something China graduates more of in engineering than the United States. The number of India's engineering PhD's has remained flat, while China's has surged, the report said.

The study ultimately found that the United States has a tremendous amount of work to do to keep up, above and beyond fixing K-12 education.

"Even if the nation did everything that is needed, it will probably take 10 to 15 years before major benefits become apparent. Given the pace at which globalization is happening, by that time the United States would have lost its global competitive edge. The nation cannot wait for education to set matters right," said Wadhwa.

Furthermore, even while the education system does improve, the report pressures for a more welcome attitude toward skilled immigrants.

"It is clear that skilled immigrants bring a lot to the United States: They contribute to the economy, create jobs and lead innovation. H1B's are temporary visas and come with many restrictions. If the nation truly

needs workers with special skills, it should make them welcome by providing them with permanent resident status," Wadhwa said.

"Temporary workers cannot start businesses, and the nation currently is not giving them the opportunity to integrate into society and help the United States compete globally. We must also make it easier for foreign students to stay after they graduate."

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