



Researcher Vivek Wadhwa on Globalization, U.S. Competitiveness and Immigrant Entrepreneurship

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When Vivek Wadhwa, a high-tech entrepreneur who has built and sold two IT companies, became executive-in-residence at Duke University's school of engineering, students asked him a question that stumped him. What courses, they asked, should they take in order to "make their jobs outsourcing-proof?" That question forced Wadhwa, who had long been involved in outsourcing, to begin researching the impact of globalization on U.S. competitiveness and the role of immigrant entrepreneurs in helping the U.S. maintain its economic edge. At the recent Wharton India Economic Forum in Philadelphia, India Knowledge@Wharton spoke with Wadhwa about his research, his own entrepreneurial journey and his brief foray into Bollywood.



An edited transcript of the conversation appears below.

Knowledge@Wharton: We are speaking today with Vivek Wadhwa, who is a Fellow at the Labor and Work life Program at Harvard Law School, and also executive in residence at the Pratt School of Engineering at Duke University.

Vivek, thanks so much for joining us today.

Vivek Wadhwa: Thanks for having me.

Knowledge@Wharton: Before we talk about your work in academia -- I know you have a very interesting background as an entrepreneur. Could you tell us a little bit about your entrepreneurial experiences?

Wadhwa: Sure. I grew up through the ranks of IT, basically: programmer, systems analyst, project manager, and eventually I developed some technology at First Boston, which led to the creation of my first start-up company called Seer Technologies. We were developing revolutionary technology to generate systems from high level specifications. Seer was a very successful company; \$0 to \$120 million in five years. The IPO was a spectacular success.

After IPOs, you often go on the rocks, so I exited soon afterwards to start my second company, which was re-engineering legacy systems and modernizing them; that was also a spectacular success, until the Dotcom bubble burst and until I started having health problems. I realized that I had to take a break from the rat race.

Knowledge@Wharton: Where were these companies based?

Wadhwa: The first one was a spin-off from First Boston in New York City, then we moved it to the Raleigh Durham area. And the second one was in the same area.

Knowledge@Wharton: Now, is the entrepreneurial experience in the southern part of the country different than it might be, say, in the Northeast or in Silicon Valley?

Wadhwa: I'll tell you what happened. I had built a \$120 million company and taken it public -- it was probably one of the most successful software companies of its time -- and I had access to anyone. I got e-mails returned from Scott McNealy, Bill Gates, you know, a who's-who of the tech industry.

And then, I started my second company. I knew that if I was in Silicon Valley, I would have had venture capitalists tripping over each other to come to me. In the Raleigh area, I couldn't get them to return my phone calls. Why? I found out later on, after networking through the Silicon Valley and through Boston, it was because my people didn't make good managers. This is how Silicon Valley used to be 20 years ago for Indians and for immigrants. That changed.

The South is still running behind in the sense that you still have these old images of Indians being low-level technicians and not being successful as managers. There's a discomfort generally in funding immigrant firms.

Take North Carolina. Other than my company, I don't know one other company in the last 15 years that has been funded which had an Indian CEO.

Knowledge@Wharton: Have these experiences helped to shape your research agenda as you have moved into academia? Could you tell us a little bit about that?

Wadhwa: Absolutely. I started out by studying globalization generally. When I joined Duke, the university came to me because I had been a pretty well known tech entrepreneur. They were asking me for mentoring and advice. There was one question they asked me which really stumped me. They asked what courses should they take that would make their jobs outsourcing-proof.

I should have known the answer to that, because I had been involved with outsourcing, I had been involved with globalization. The trouble was, I didn't know why they were worried and what they could do about it, so I started researching it. And the more I researched, the more I got concerned about U.S. competitiveness.

So then, I had to shift gears. I wanted to look at what the U.S. could do to keep its edge, and this is where my past came in. I knew that in the tech industry, immigrants were playing an increasingly larger role; in particular I knew there were a lot of Indians who were starting tech companies.

I also wanted to compare the different regions, compare immigrant entrepreneurship across the regions; so basically I got together with Dean AnnaLee Saxenian of UC Berkeley and we tried to update a 1999 study, which found that a quarter of the tech start-ups in Silicon Valley were

founded by immigrants.

In a nutshell, what we found was that the trend which began in Silicon Valley had become a nationwide trend; that 25% of the companies nationwide were founded by immigrants, 52% of those in Silicon Valley were founded by immigrants, and Indians were by far the largest founding group of these immigrants.

It confirmed what I knew; it also showed me on a region by region basis that the entire RTP area is at the bottom of the list in terms of immigrant entrepreneurship. It proved in numbers what I had known through anecdotal evidence.

Knowledge@Wharton: Did you also find any evidence about revenues and jobs created by companies launched by immigrant entrepreneurs?

Wadhwa: We found that in 2005, these immigrant-founded companies in the engineering and tech sector generated \$52 billion in revenue and employed 450,000 people.

Now, to the people who are opposed to skilled immigration: If you added up all the engineers and technologists who entered the U.S. in that 10-year period in which we did the survey, the number of jobs that these immigrant-founded companies were generating was more than the number of immigrants we allowed in the entire 10-year period. Plus they were fueling the economy. The fact that you have 25% more start-ups than you may otherwise have had is hugely important for U.S. economic growth and for our global competitive advantage.

Knowledge@Wharton: Like the issue you mentioned about the entry of skilled immigrants into the U.S., another issue that has been somewhat controversial is the outsourcing of jobs overseas, and especially skilled jobs going overseas. Have you looked at that in your research and what does your research show in that area?

Wadhwa: We looked at R&D going offshore. Let's take dressmaking. Dressmaking goes; you still have dress design, right? Now, if dress design goes, what do you have left? So, what's happened right now is that, whether we like it or not, a lot of low level technology jobs have gone overseas. That's fine, as long as we are still doing the design and the analysis in the USA.

What we are seeing is that increasingly R&D is shifting overseas - to India, China and all over the world. Now, you can't stop it. No matter what the U.S. does, it cannot stop the fact that India is rising rapidly. China is trying very hard to rise and catch up with India, but our research is showing that they are having lots and lots of problems because you can't mandate innovation. That's what the Chinese are learning the hard way.

So, India's rising, China is struggling, but nevertheless they're spending massively on R&D. So, what can the U.S. do? I mean, we can't stop it, we're not going to shut our borders and we're not going to shut down R&D happening overseas. What we have to do is figure out how to adapt to it and benefit from it, and to uplift our entire workforce.

Knowledge@Wharton: And how does the U.S. do that?

Wadhwa: One of the things we discovered was that India's education system is really weak. That the number of engineers who graduate is much, much less than is commonly believed, and the fact is that they are graduating only 800 to 900 PhDs a year in engineering, 30,000 - 35,000 real master's degrees a year in engineering.

So, this contradicts everything I've just said about India rising in R&D. The question is, how can a country in which the education system is so weak, in which it's politicized, even though they're now talking about making investment, the fact is that it will take five years before that investment has any benefit.

How is it that India is rising so rapidly? The answer that I've discovered after meeting with dozens of companies over there is in the workforce training. Indian companies have taken the best practices in the U.S. and from Europe and moved those up a couple of notches.

For the recent graduate joining a technology company [in the U.S., it takes about] 10 years or so [to become a manager]. In India, they can do that in three years, a maximum of four years. Because they've perfected the art of training people.

They invest heavily year by year in upgrading their workforce. We've forgotten how to do that. Our best companies -- some of them still do -- but the vast majority of American companies don't invest in their workforce any more. India has learned how to do that from the U.S. and they have perfected the art.

So, if you ask me what's the number one thing the U.S. could do keep competitive? Yes, we keep talking about improving K-12 education, and it's very important. Math and science are very important. But, the fact is, there are 120 million people in our workforce. Invest in them. Start with upgrading your workforce and you'll become competitive.

Knowledge@Wharton: Could you offer some examples of the kind of things that you have seen companies in India or China do to invest in their workforce that could be replicated by companies in the U.S.?

Wadhwa: I can tell you from India, because in China we haven't seen the same level of innovation. In China, the innovation is largely being driven by multinational corporations, and they're simply replicating U.S. practices in China, nothing more. I haven't seen anything advanced beyond that in China.

Now in India, it was just amazing. You start off with recruiting. The fact is, Microsoft, for example, get 200,000 or 300,000 resumes a year from programmers. They have software that goes through it ... and then selects the people they want to interview.

In India, the education system is pretty weak, and if you went simply by degrees and resumes, you wouldn't hire anyone. Yet, business has to do it. So, companies like Convergence, companies like Genpact, what they've done is they've set up storefronts. You go to that like you're going to a shopping mall, and they have video presentations where you can take your family, learn all about the company. And you can do an interview on the spot.

If they think you have potential then they'll put you through the process, hire you, and then they'll train you in the local area as well. That's innovative. The fact is, they're not relying on resumes the way we rely on resumes.

And then, you start work. You go to Infosys and they put you through a four-month training program, which is like a boot camp. By the time you're done with that, you've got the equivalent of a master's degree.

It doesn't stop there. In the U.S., once you graduate and join a company, you're expected to now be productive and that's typically the last training you go through. Companies like IBM offer you online training and they facilitate your learning if you want to learn. But, the fact is that there's no incentive built in the system.

In India, you go to companies like Satyam, Infosys and so on. They mandate that you must receive 100 to 200 hours of training every year of your career. So basically, Indians at the top level receive more training than Americans receive

And then, they get rewarded for doing it. There are systems set up to manage the progression of the career. We have HR directors. Well, they have talent directors which are appointed by CEOs of the companies as well. They give talent development the same level of importance that we give HR development over here.

So, they manage your career, they help you through it, they guide you through the entire process. The CEOs and executives spend an inordinate amount of time training their employees and building the workforce and so on.

I could go on and on for half an hour about the amazing things that they're doing there, but the U.S. needs to learn from them. Getting back to how the U.S. can keep its edge, it's time for us to learn from our disciples. We've been the gurus so far in management and workforce training and India has been the disciple. It's now time for the guru to learn from the disciple.

Knowledge@Wharton: That's really interesting. I know along with your work in entrepreneurship, as well as in IT and in academia, you had a brief foray into Bollywood. Tell us about that experience.

Wadhwa: [laughs] You want me to confess my sins now, right?

Knowledge@Wharton: Please.

Wadhwa: When I first disengaged from the tech world, I had been working so hard that I didn't get time to spend with my children. My son decided he wanted to be in India and he wanted to be a movie star. He was fascinated with Bollywood.

I was really worried about him leaving his technical career, his promising technology career, and moving into Bollywood, so I'd rather take him into it. I got involved with some producers and

helped produce a film in Bollywood. I gave him a role in the film and basically went through the entire experience of Bollywood.

By the time we were done he said, "Dad, thanks for taking me there, but no thanks. I'm out of here. I want to go back to the tech world." And I also learned how crooked Bollywood is, because if you're dealing with American producers and Hollywood people, I tell you, Bollywood, for all of its bad [reputation], doesn't hold a candle to the crookedness of Hollywood.

Knowledge@Wharton: Really?

Wadhwa: They're both very corrupt industries.

Knowledge@Wharton: How so?

Wadhwa: Just the entire system. Everything from the way financing is done to the way it's managed to the way the system is rigged in favor of the large studios. The entire system is very weak, and both industries are equally corrupt.

Knowledge@Wharton: You must come back at some future date to have a more detailed conversation about that. But, for now, can you tell us a little bit about what kind of future research projects you are working on?

Wadhwa: One of the things we learned is that industries have changed. I'm sure most people, even now when they think of the automotive industry, they think of the American automotive industry or the Japanese automotive industry. Now, you hear about an Indian automotive industry.

The fact is that there's no such thing as an American automotive industry. The technology for American cars is built globally. The technology for Chinese cars is built globally. The parts for the Indian Tata car are assembled globally. What's happened is that entire industries have globalized.

Take the pharma industry. The same thing. The fact is that the entire pharma industry is now dispersed, diffused. You are now increasingly seeing drug discoveries happening in India and China. You're seeing clinical trials happening in India and China. You're seeing almost every value segment of that industry happening in India and China.

The same thing with the aerospace industry. The same thing with the semiconductor industry. Industry by industry -- I'm actually analyzing six industries to show that they've become like sand now, or Lego blocks. It's no longer monolithic blocks any more. It's sand which is dispersing.

So, we're demonstrating how globalization has changed the entire face of industries. I'm doing an extensive new project on workforce training and education. I'm also doing a follow-up on the immigration research to understand what's happened to returnees. Because what we're finding is that increasingly returnees have been driving innovation in China, and they did in India, but

India has become self-sustaining in terms of innovation. It's really built a domestic capability to do what it needs and it's not dependent on returnees any more. But, we're doing extensive new research on returnees.

And then, my favorite new topic is entrepreneurship. We're also looking into the backgrounds of American-born entrepreneurs and so on. So, you'll be hearing a lot from me, and we'll be publishing quite a few interesting papers over the next 12 months or so.

Knowledge@Wharton: I look forward to seeing them. Thanks so much for joining us today.

Wadhwa: I enjoyed being with you.