

IT in India

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IT IN India has come a long way since it first appeared in the 1980s, when US technology companies started leveraging the cost arbitrage between US and Indian programmers. The liberalization of certain economic policies that started in 1991 led to the birth of innovative companies, such as Infosys and Wipro. These companies used the “quality route” to grow their business—Indian IT companies followed the five levels of the Software Engineering Institute’s certification more than any other country, including US.

The arrival of the Internet and imaginative government policies, such as fast and easy access to international data circuits and tax benefits through Software Technology Parks of India (STPI), led to further growth. Then, by the turn of the century, the IT industry started focusing on what I refer to as EQQ—English language skills for engineers and higher quantities of quality engineers. EQQ gave India an advantage over Ireland (which had fewer programmers), China (which lacked engineers proficient in English), and

the Philippines (which lacked qualified programmers). The Y2K phenomenon that led to a global shortage of programmers propelled Indian IT companies into a position of global leadership. By the middle of the last decade, Indian IT had arrived.

Achievements

India’s IT industry is growing steadily. Indian IT companies have reached the global stage and are undertaking interesting IT projects.

Employment and Education

The IT sector has created jobs for 2.8 million IT professionals (and has indirectly employed an additional 8.9 million). The rapid growth of engineering education, with more than 500,000 undergraduate IT engineers graduating per year, feeds into this steadily growing IT industry.

Business Growth

For the 2012 financial year (which ended March 2012), annual business crossed US\$100 billion in sales revenue, with IT contributing to 7.5 percent of India’s GDP. Furthermore, India

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had 58 percent of the “global IT services” outsourcing revenue. Indian IT services account for 25 percent of its exports.

Most Fortune 500 companies outsource some of their work to Indian IT companies, and many (almost all in the top 100) operate either directly or indirectly in India.

The IT company Tata Consultancy Services reached \$10 billion in annual revenue by March 2012, with a healthy bottomline (22 percent). Another company, Infosys (with \$7 billion in annual revenue), created the “ACM Infosys Foundation Award for Computing Science” in 2007 to celebrate 25 years of service (awards.acm.org). Fortune magazine recently named Infosys founder NR Narayana Murthy, who is known for his unique way of combining capitalism and socialism, as one of the 12 greatest entrepreneurs of our time.

E-Governance

Over the past five years, India has spent billions of dollars on its e-governance project—one of the largest e-governance projects in the world (negp.gov.in).

Moving Up the Value Chain

Although India has had significant success in IT services (including business-process outsourcing), it has yet to strike gold with IT products (hardware and software) and intellectual property (IP). There are just a handful of success stories, one of which is the Finacle software suite from Infosys.

Finacle addresses the core banking, e-banking, treasury, wealth management, and customer

relationship-management needs of retail, corporate, and universal bank customers (including Islamic banking). Finacle is currently used by 148 banks spread across 75 countries with nearly 400 million accounts and 300 million customers (www.infosys.com/finacle). Gartner has placed it in the “Leaders Quadrant” of its “Magic Quadrant for International Retail Core Banking.”

Ittiam Systems offers another success story. It creates IP in the digital signal processing (DSP) area for video communications, automotive in fotonics, networking, and media (see www.ittiam.com). It has been in business for 10 years and its current revenue is \$20 million—37 percent of which is generated through IP licensing. Such a revenue model isn’t common in many Indian companies. For the last seven years, Forward Concepts (www.fwdconcepts.com) has named Ittiam Systems the “World’s Most Preferred DSP IP Supplier.”

Indian IT companies must “move up the value chain” in the years to come. Possible strategies might include.

- producing focused products for either the domestic sector, specific markets (say, emerging or African markets), or global markets;
- developing technology in emerging areas (next-generation networking protocols, for example); and
- creating IP in areas where Indian IT companies have strength or for local markets.

The consumption of IT within

India must improve too. In addition to surging exports, IT

should improve efficiencies within the Indian industry. Although a lot has yet to be achieved, India successfully transformed its banking through widespread IT adoption. Thanks to the Reserve Bank’s constant push for technology upgrades in the banks, the banking sector saw core banking, ATM, and multichannel banking implemented across all the banks. Efforts are ongoing to get those citizens who aren’t covered by banking (a significant portion of India’s population) covered through “no frill,” inclusive, or mobile banking.

IT: India’s Tomorrow

Former Indian Prime Minister Atal Bihari Vajpayee once described IT as “India’s tomorrow.” With the convergence of computing, communications, and electronics, the scope of IT is changing, as are key industries, such as

- transportation (road, rail, air, sea, and urban transport);
- financial services (banking, insurance, and stock trading);
- hospitality (hotels, restaurants, and tourism);
- automotive and aerospace;
- core industries (oil, gas, steel, and mining);
- services (education and healthcare); and
- retail.

Areas such as industrial automation and medical electronics are embracing open standards and starting to use commodity hardware. Leading companies in those domains—such as ABB and Siemens—could soon become “IT companies.” Indian IT is

thus likely to enjoy steady and sustained growth for at least another decade.

Roadblocks to Continued Growth

However, the Indian IT industry must overcome some roadblocks to maintain its current rate of growth.

Anti-Outsourcing Sentiment

Increasingly, global markets (including in the US) are trying to prevent outsourcing—particularly to “low cost” destinations like India.

Employment Changes

India has seen higher internal costs (mostly wages), reduced productivity, and unionism among its IT employees. The Indian IT industry has had double-digit wage increases for many years, whereas wage increases have been considerably lower elsewhere. For example, the 2012 projected salary increase for India is 12 percent, whereas it’s 9.5 percent for China and 7 percent for the Philippines.

Education

Universities haven’t been able to graduate large numbers of high quality professionals to take up jobs in the IT industry. There’s an acute shortage of faculty in higher education due to much smaller enrolment in graduate studies compared to undergraduate degrees. In addition, faculty compensation is insufficient. However, things are improving with the start of new Institutes of Information Technology (IITs), Central Universities (including “Innovation Universities,” which focus on new technology and inter/cross-disciplinary research in emerging areas), and capacity

increases in existing institutions—along with the recommendations of the Sixth Pay Commission in 2010.

New Business Models

India must address disruptions in business models. For example, new applications are fundamentally changing how software is produced (in very small groups or by just a single person), delivered (over the “cloud”), and consumed (using appliances like smart phones).

Key Projects and Emerging Companies

Here, I look at some key IT projects and emerging IT companies in India. (For a brief discussion of how I selected these particular projects, see Box.)

Aadhar

Project Aadhar, which started in 2009 and is one of the most ambitious IT projects in the world, aims to provide a unique ID to every citizen (<http://uidai.gov.in>). By 2014, using a combination

of biometric measures, Aadhar aims to identify every Indian and accept or reject identity claims within a few seconds—for the 1.2 billion Indians spread out across the country.

Flipkart

In 2007, two IIT graduates, Sachin and Binny Bansal, started Flipkart, an Indian e-commerce store (www.flipkart.com). It’s current annual revenue is almost \$100 million, and it’s expected to grow to \$1 billion by 2015. Flipkart focuses on

- ease of use;
- variety (books, stationery, and recently digital rights management (DRM)-free digital music);
- low prices (books are often sent with no shipping charges); and
- timely delivery.

Flipkart also address the unusual Indian needs of “cash on delivery” (most of the adult Indian

Project Selection

There are many potential companies to choose from, but I ultimately selected these four for a variety of reasons. They were featured at a couple of events (including a panel discussion at Stanford University) and have won awards. They’ve also reached a scale to make a societal impact—Aadhar will affect the entire Indian population, Flip Kart could make billions of dollars in the next few years, Red Bus has reached hundreds of operators, and Tutor Vista has thousands of tutors.

They represent novel applications—not just another browser, Tablet, or smart phone—and they help reach unique audiences. For example, Flip kart reaches those without credit cards or who prefer cash on delivery, and Red Bus helps those in rural India. Also, they relate to daily activities: shopping, transportation, and education.

Finally, I’ve been closely watching these companies. My colleagues and I use Flip Kart services; Red Bus had recruited some of our former students—some of whom were its very first set of proud employees; and Tutor Vista was incubated at the Indian Institute of Information Technology, Bangalore.