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“ We must deliver speed, connectivity, bandwidth, and last mile connectivity to the users...private enterprise must be given incentives and a free hand in developing this at a frantic pace.”

—*Indian IT manager*

“ There is not enough emphasis and R&D for local language applications, or enough emphasis [on] IT services from the government and industry.”

—*Indian IT manager*

The adage that India is a snake with its head in the twenty-first century and tail in the nineteenth holds true. India faces monumental social challenges and is hampered by bureaucracy, political strife, and the legacies of a planned economy. Yet, the nation is endowed with so many highly trained, ICT-savvy workers that many believe technology will launch India into the developed world. India ranks fifty-fourth overall in Networked Readiness.

In addition to terrible roads and an inadequate electricity supply, India has a weak information infrastructure (Ranking in Information Infrastructure micro-index: 65). The absence of a national backbone and limited access to the international gateway have resulted in high communications costs and poor service. Telecommunications are improving, but state monopolies still dominate (Ranking in Effect of Telecommunications Competition: 41). Private companies are laying fiber-optic cable, and international connections are coming online, but many projects have been delayed, service is still lacking due to infrastructure deficits, and new telecommunications companies are not meeting mandated rural service targets.

While cost and service are improving, most telephones and PCs are owned by businesses and located in cities, and nearly half of India's villages have no telephones. People access telecommunications services primarily in the nation's Public Call Offices (PCOs) and cyber cafés. For those who can afford them, mobile telephony (even in rural areas) and ISPs are widespread.

PCOs and cable television are renowned for reaching India widely, deeply, and rapidly. As the focus moved from teledensity to accessibility, almost one million PCOs were connected, and they now account for 25 percent of state telecommunications revenues.<sup>1</sup> Since 1992, mostly independent entrepreneurs rolled out approximately 50 million cable connections across the country, for each of which they charge less than US\$3 per month.<sup>2</sup>

Public education is inadequate (Ranking in Social Capital micro-index: 71), although reform is leading to improvement in some states. Where ICT programs exist, they focus on computer science, not on integrating technology with the curriculum. Private schools, which offer better access to ICTs, are not limited to the elite.

Higher education provides good training and produces hundreds of thousands of math/science/engineering graduates annually. The Indian Institutes of Technology (IITs) are among the most selective universities in the world and well known in Silicon Valley. The IITs lack financial resources, and like other top technical institutions also have inflexible curricula. Omnipresent training institutes capitalize on widespread ICT enthusiasm and make basic skills attainable (Ranking in Quality of IT Education: 9).

Social obstacles to ICT use include poverty, illiteracy, and linguistic diversity. Indian language software and coding standards are lacking, but academic and private labs are creating hardware and software that address local needs better than many technologies from the U.S. and Europe.

With the ICT boom and economic liberalization of the 1990s, software exports became one of the country's most profitable industries (growing from US\$734 million in 1995 to US\$6.2 billion in 2000).<sup>3</sup> Policy and economic incentives for export have resulted in underdevelopment of the domestic ICT market. Individuals and organizations are beginning to use information technology, but SMEs, people and businesses in rural areas (where 70 percent of the population lives), and poor communities risk being left behind. Central and state governments are promoting pilot efforts for Internet access, education, and e-government.

The combination of a weak telecommunications regulator and imperfect framework politics limits competition. Reform is ongoing, however, with promised legalization of VoIP, convergence of the IT and Communications ministries, and planned privatizations of state telecommunications firms.

## Key Facts

Population	1,010,000,000
Rural population (% of total population) 1999	71.92 %
GDP per capita (PPP)	US\$2,403
Global Competitiveness Index Ranking, 2001–2002	57
UNDP Human Development Index Ranking, 2001 (adjusted to GTR sample)	71
Main telephone lines per 100 inhabitants	3.20
Telephone faults per 100 main telephone lines	186.00
Internet hosts per 10,000 inhabitants	0.35
Personal computers per 100 inhabitants	0.45
Piracy rate	63.00 %
Percent of PCs connected to Internet	0.78 %
Internet users per host	139.63
Internet users per 100 inhabitants	0.49
Cell phone subscribers per 100 inhabitants	0.35
Average monthly cost for 20 hours of Internet access	US\$6.66

**RANK**

## Networked Readiness Index **54**

### Network Use component index **60**

### Enabling Factors component index **49**

#### ■ Network Access **50**

Information Infrastructure 65

Hardware, Software, and Support 34

#### ■ Network Policy **47**

Business and Economic Environment 57

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#### ■ Networked Society **52**

Networked Learning 31

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Social Capital 71

#### ■ Networked Economy **42**

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e-Government 33

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