

Bridging the Digital Divide – The Need of the Hour In India

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The forces of globalization and technology are continuously reshaping our world. The convergence and pervasiveness of information and communication technology are giving rise to a new type of economy – the knowledge economy. Technology has had a crucial role in defining today's globalized market structure. In this context, India has made giant steps towards acquiring competence in Information and Communication Technology (ICT). The success story of the Indian IT industry bears testimony to this. However, this technical competence has to be used to improve the quality of life of the Indian masses. In the words of John F Kennedy: *If a society cannot help the many who are poor, it cannot save the few who are rich.* The need of the hour is to bridge the digital divide and bring the benefits of technology to the Indian masses.

Information technology reduces costs, saves time, improves efficiency, raises comfort levels and increases the confidence of consumers. Hence, developing countries such as India should leverage the power of IT to leapfrog poverty barriers, and promote economic and social development.

However, even with the coming of the IT revolution in India, around 300,000 Indian villages are still without telephones. 70% of India's population resides in the rural areas and have not had much exposure to technology. 26%¹ of the population lives below the poverty line and 35% are illiterate. Thus, a large section of Indian population is at the risk of getting marginalized in this information revolution. India

¹ Source: Poverty data are based on the Indian government definition of ability to purchase food for a minimum consumption of 2400 calories per day

is increasingly getting divided into people who do and people who don't have access to – and the capability to use – modern information technology. This divide exists between the cities and rural areas, between the rich and the poor, and between the educated and uneducated.

Sustainable progress can be achieved, only if we bring this vast majority of Indians onto the 'network', and thus, benefit from the increased productivity that information and communication technology offers. The anytime-anywhere and death-of-distance paradigms of technology enable better leveraging of scarce resources such as healthcare and education.

In India, 51% of the population does not have access to essential drugs. Further, there are only 48 physicians per 100,000 population compared to 279 for US and 162 for China. ICT can help bring medical expertise to taluks and district headquarters. Tele-medicine, for instance, links healthcare centers in remote locations, through satellites, with super specialty hospitals at major towns / cities. Thus it brings connectivity between patients at remote end, with specialist doctors, for medical consultations and treatment. An example of this is, Narayana Hrudayalaya, a super specialty cardiac care hospital in Bangalore, India. This hospital uses tele-medicine to bring heart-care to remote areas in the country.

In the public domain, ICT can be used for more efficient governance. In a large developing country like India, there is a significant need for introducing transparency and efficiency in government functioning. Through E-governance, the government can provide required infrastructure to effectively service citizens' needs. By separating the delivery of services from decision-making, the chances of corruption are reduced. Further, E-governance reduces the time in interactions with the government. For instance, the Bhoomi project launched by the Karnataka state

government in India, to digitize rural land revenue records, makes the process more accessible and transparent. Today, the project serves about 70 lakh (7 million) farmers and connects over 170 taluks.

The Internet can be used as a communication channel that governments can use to reach out to their citizens. For instance, citizens can monitor the progress of various government initiatives online. ICT also enables effective planning. Simulation can be used as a good tool for what-if analysis. It helps us understand the parameters of public systems (over a period of time) like pollution levels, provision of basic infrastructure – schools, water, electricity, health care, commuting times, etc.

Since more than half of our population is employed in agriculture, India has put ICT to good use in this sector. India has led the use of remote sensing satellite information for locating irrigation projects. The Internet has been effectively used in some of the villages to ensure effective dissemination of agricultural commodity price information. The National Dairy Development Board (NDDB) in India has used IT effectively, to enhance competitiveness of the dairy industry and to provide benefits to the rural masses.

Distance education has tremendous potential to spread learning in India. E-learning is a cost-effective way of providing education at a distance. This is especially important considering that around 85% of illiterates in India are from the rural areas.

In this context, it is essential that the academia, government, the industry and NGOs partner to bridge the ever-widening digital divide. Together, they need to create an 'enabling environment' for the proliferation of ICT in India. There are some basic steps that India needs to take in this regard.

An important step is to improve connectivity. With a PC density of 4.94 per 1,000 population and a tele-density of 32 fixed lines per 1,000 population, India needs to increase penetration in terms of PCs and communication lines. Connectivity options to the rural areas can be improved, by using wireless access. corDECT, an advanced, wireless access system developed by the TeNeT group of IIT Madras, Midas Communications and Analog Devices, is an instance of this. In addition, Cyber cafes in the urban centers and village information kiosks in the rural areas will enhance the reach of IT.

The high cost of ownership, which proves a barrier towards proliferation of access devices, needs to be lowered. Due to high tariff levels, the cost of hardware in India is significantly higher as compared to the rest of the world. For instance, A PC in India costs around 24 months of average per-capita income as compared to China's 4 months and USA's 12 days. Hence, we need to reduce the tariff levels.

Inventions such as the Simputer can further reduce costs by providing affordable computing. The Simputer was developed by scientists from the Indian Institute of Science, Bangalore and Encore, a software company. At \$ 200 a piece, the Simputer offers computing facilities at a drastically lower cost compared to \$ 650 for a PC. Further, it has a local language interface. This is an instance of how the academia and industry can collaborate to develop technology to suit the masses. In another instance, Infosys has partnered with n-Logue Communications for providing and operating telecom and Internet services in the Mandya district in Karnataka, India. n-Logue is a company that focuses on providing rural connectivity. This firm has been incorporated by the TeNET group of the Indian Institute of Technology (IIT), Madras.

India has a large population with great linguistic diversity. Creating and maintaining locally relevant content is a challenge. Nevertheless, local language content will make ICT more relevant and accessible to a broader cross-section of the population. Hence, we need to develop applications that support local languages. In addition, we need to develop voice applications that will let Indian masses interact with computers using the spoken language.

IT literacy is critical to ensure that people can derive appropriate benefits from the technology revolution. However, at a more fundamental level, providing basic education is the first step towards enabling our people to use ICT. Today, only 65% of the Indian population is literate and only about 60% children study up to class 5. In this regard, the Indian government should focus on basic education. In the words of Mahatma Gandhi: *Money invested in the promotion of learning gives a ten-fold return to the people, even as a seed sown in good soil returns a luxuriant crop.* Subsidies, however, should only exist in basic education and not in higher education. In addition, basic education must also function in a free-market environment.

Private companies and NGOs should partner, in order to enhance awareness and utilization of ICT at the grass-roots level. For instance, Infosys' 'Rural Reach' program brings elementary computer literacy to participants from rural India. As part of this programme, IT professionals and educators visit rural schools and help students get familiar with technology.

In addition, India needs an efficient innovation system of industry, science and research centers and universities to create new knowledge and technology. In this regard, we need an effective higher education system that provides specialized training, education and research.

The Chinese philosopher, Lao Tse once said: *A thousand-mile journey begins with one step*. Several Indian states have made proactive steps to take technology to the masses. However, the country has a long way to go. India's progress will depend on how best it can leverage the power of ICT to increase the productivity of its citizens. Bridging the digital divide is a major step towards this.