

Regional Roundtable on Information and Communication Technology:

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1. Introduction

Honorable Chief Minister of Karnataka, Mr. S. M. Krishna; Honorable Minister for Communication and Technology of the Government of India, Mr. Pramod Mahajan; Honorable Chief Minister of Andhra Pradesh, Mr. Chandrababu Naidu; distinguished participants, ladies and gentlemen, it gives me great pleasure to be present here today in Bangalore on the occasion of this Regional Roundtable on Information and Communication Technology.

This beautiful city of magnificent buildings and tree lined avenues, once a haven for genteel retirement, has reinvented itself a second time. During the 1960s and 1970s, Bangalore developed as a major hub of high technology manufacturing industries, and it has again reinvented itself now as the center of information and communication technology in the region. More than perhaps any other place in the world, it is this city which demonstrates that the digital divide is not an insurmountable barrier. In Bangalore the world has seen that a developing country can not only hold its own but even achieve a competitive edge over developed countries in the field of information and communication technology. It is therefore appropriate that this Regional Roundtable on Information and Communication Technology is being held in Bangalore. The Asian Development Bank considers it a privilege to have had the opportunity to help organize the Roundtable.

2. ICT and the Third Industrial Revolution

It has often happened in history that those who live through revolutionary times do not fully grasp the epoch making character of their life and times. I believe that perhaps our own generation is experiencing such a turning point in history due to the advent of the new information and communication technology. In a single generation, in our own lifetime, we have gone from the age of manual telephones and manual calculators to the age of high speed handheld computers, palm tops, and cell phones which have wired us into a great global electronic network. With this has come concomitant changes which have dramatically altered the way we live and work, just as the invention of the steam engine and the discovery of electricity had changed the lives of our forefathers. We are, in other words, living through what has been aptly described as the third industrial revolution, this time led by information and communication technology.

The depth and reach of this ICT revolution is quite breathtaking. Within the span of a decade or two it has changed almost every aspect of social and economic activity. To begin with, the linear assembly line system of mass production launched by Henry Ford, Taylor and others in the early 20th century has now been superseded by globally decentralized production systems, or so called 'supply chain management' based on computer aided design and computer aided management of production system. A product is now disassembled into all its component parts, and production of different components and subassemblies are located in different parts of the world. These are then brought together for assembling a final product in particular locations. These globally decentralized 'customized' mass production systems which can deliver final products designed to individual customer specifications are enormously complex and could not have existed but for ICT.

The same applies to the financial sector. With digitization ICT has globally integrated financial markets which now operate virtually round the clock with minimal transaction costs, facilitating efficient arbitrage and minimizing the costs of global financial intermediation. Interestingly, ICT now combines the record keeping advantage of documented transactions with the speed and convenience of verbal transactions over the phone, which it is now superceding. Being wired through internet is now an essential requirement for survival in the competitive game.

The advent of ICT has also generated new kinds of services, organizations, jobs and market structures. Outsourcing has now emerged as a cost effective option in many businesses. Back office operations are being increasingly relocated to remote areas with large pools of skilled, cheap labor, often in a different country. Similarly, vendors are now peddling everything from books and music to cars and machines through the internet.

Nor is this revolution confined to economic activity alone. Telemedicine and e-education have served as force multipliers to make the services of the best teachers, surgeons, and doctors available to thousands of students and patients in remote locations, who could not have hoped earlier to have access to such services. Telecenters, internet kiosks and community learning centers have made access to information affordable for consumers on a mass scale.

The ICT revolution is also having profound effects on modes of governance. With the technological possibility of speedier communications, transparent record keeping and ICT based management in Government, the delivery of public services and regulatory functions are being radically transformed. However, this requires strong commitment to change from governance to e-governance by the political leadership at the top; and a great deal of effort in overcoming

resistance from vested interests. I am sure that my honorable co-panelists will bear me out on this as pioneers in ushering in e-governance in their respective governments.

3. Overcoming the Digital Divide

ICT has now become an integral element of business transactions. It is estimated that out of total global Business-to-Business goods trade of US\$11.5 trillion, about 3 percent is now traded electronically and the share is rising rapidly. Similarly, electronic Business to Consumer Trade is now of the order of \$45 billion. Another \$15 billion of business transactions were internet assisted. According to projections, resources from remote servers will reach \$140 billion by 2008, and \$2 trillion by 2020.

However, access to digital technologies remains highly unequal globally, and even among the developing countries themselves. Much of e-business is currently conducted within the developed world. In the USA alone it is estimated that some 250,000 firms process transactions in the order of \$3 trillion. This is not surprising since the access to internet is very cheap in USA relatively to income levels but prohibitively expensive in most developing countries. The Human Development Report for 2001 indicates that internet access charges amount to only 1.2 percent of average monthly income in the USA, compared to 60 percent in Sri Lanka, 191 percent in Bangladesh, 278 percent in Nepal and 614 percent in Madagascar!

There are also vast differences in access to ICT among the developing countries themselves. Korea joined the developed countries as a member of OECD just before the 1997 financial crisis. The bandwidth available in Korea's capital city Seoul alone is roughly equal to the total bandwidth available in the whole of Latin America. In turn the bandwidth available in the Brazilian city of Sao Paulo alone is more than the total bandwidth available in Africa.

These indicators of the digital divide are quite dramatic. However, the digital divide is not insurmountable. India is a live example of how even a country with low per capita income can make rapid strides in ITC development. In the last five years, the Indian IT industry has grown at a rate of over 42 percent per annum, roughly double the rate of IT industry growth in developed countries. IT software exports have been growing at about 50 percent per annum, rising from only \$150 million in 1990 to over \$6 billion at present. At current rates of growth, India's software exports could reach \$160 billion by the end of the decade, and finance all its imports of goods and services.

Of course it is not realistic to expect that such high rates of growth will persist year after year. Already this year the slump in the IT industry in USA, which accounts for a third of total US growth, has led to serious concerns about recession not only in the USA but also its major trading partners, including many Asian countries. Fortunately, India's exports are in the software sector, whereas the main brunt of the IT industry slump is in the hardware sector. Hence, its adverse impact on India's exports and overall growth are expected to be modest.

There are also some specific aspects of the Indian experience which are worth noting. Every year there are about 70,000 ICT related migrants to the USA, of whom about half are from India. There are additional ICT linked Indian migrants to Europe and to Asian destinations like Singapore, Japan and Hong Kong. Traditionally, this migration would be seen in a purely negative light as a brain drain. Today we know that the same migrants constitute a highly skilled Indian diaspora which is pulling India into a global digital network through business links and the transfer of both resources and technology. Second, it is recognized that the ICT revolution in India is led by private enterprise and capital, as it should be. However, this would not have happened without the enabling environment provided by Governments, particularly the

supportive role of forward looking state Governments such as those led by my fellow panelists Mr. S. M. Krishna and Mr. Chandrababu Naidu. Third, the rapid growth of ICT would not have been possible without massive investments in state-of-the-art ICT infrastructure, and in human resources developed through a network of top quality engineering schools.

Along with these successes there are also many challenges for ICT development in India. The Indian ICT industry is dominated by a few large companies, unlike the thousands of small companies which drive the successes of Silicon valley. The potential of such small enterprises in the ICT sector is not yet being tapped. Similarly, the Indian ICT industry remains locked into the labor intensive end of the spectrum, with low value addition per worker. There is a need now to move up the value chain. Furthermore, while large investments are rapidly raising capacity in the ICT sector, the shortage of power continues to severely constrain the growth of the sector, as indeed of many other sectors in the country as well.

4. ICT and Poverty Reduction

The Indian experience I have just described tells us that the so called 'digital divide' is not insurmountable. The less developed countries can not only participate in this dynamic sector, but can even play a leading role. I would like to go a step further, and make an even stronger claim. ICT is by no means a technology relevant only for the rich countries. On the contrary, it is an extremely powerful tool which can be effectively used to reduce poverty and help the poorer citizens of developing countries if it is used imaginatively. First, it is becoming clear that ICT can be a leading engine of growth in developing countries, both through exports and through radical transformation of production arrangements which can enormously enhance productivity. We also know that growth is the only sustainable route to poverty reduction in the long run. Hence, ICT led growth is also ICT led elimination of poverty. Apart from this broad

macroeconomic linkage between ICT and poverty reduction, I should also mention the more direct and immediate link between ICT and poverty reduction. By enhancing access to education and health care through distance learning and telemedicine, ICT can immediately improve the quality of life for poor rural communities who do not have access to these facilities. Access to better and more timely information can also increase the income earning capability of poor communities. In the Indian fishing village of **VEERAMPATINAM**, weather forecasts downloaded from the internet and broadcast by loud speakers at the beach enable the poor fishermen to know better when to take out their boats. The Grameen phone in Bangladesh and the public call booths which now dot the Indian countryside again show how poor rural communities in developing countries can access state-of-the-art telecommunications without owning any equipment. I am told that the access to international trunk dialing facilities in India's villages is now the envy of even some industrialized countries. Finally, the greater transparency, accountability and responsiveness within governments which comes with e government is a great boon to the poor, who are usually the worst victims of harassment by corrupt officials. In other words far from being an instrument for the rich, ICT is an extremely powerful tool for empowering the poor.

5. The Building Blocks of a Successful ICT Strategy

Let me turn now to the essential building blocks of an ICT development strategy. At the top of the list is expansion of infrastructure. Technology is the driving force of the ICT industry, and much of this rapidly advancing technology is embodied in infrastructure. According to Gilder's Law, bandwidth is increasing exponentially, doubling every six months, and Moore's Law tells us that the processing power of microprocessors is doubling every 18 months. At the same time dense wave division multiplexing is multiplying the data carrying capacity of optical fibers. High speed radio and wireless access technologies now give broadband connectivity to

businesses and homes. Wireless local loops promise easy access to vast numbers of people in remote areas. Voice over IP and IP networks which carry voice, data, images, and video through a single network will further bring down costs. The infrastructure which embodies these technologies require large investments. In a poor country with scarce capital, the judicious use of investment funds is therefore critical, as is imaginative use of the existing capital stock. Telecenters, internet kiosks, and community learning centers are good examples of how this can be accomplished.

The second key component of such a developing country ICT strategy, as I noted earlier, is investment in human resources to create a growing pool of skilled personnel for the ICT sector. Links between academia and industry, combined with the use of ICT itself for remote learning, can lead to the rapid expansion of ICT skilled human resources. The third important building block of an ICT strategy is venture capital, which pushes innovation and expansion in the ICT sector. On the side of applications, I referred at the outset to how ICT is transforming both production and trade. I also referred to the transformations that ICT can bring about in education, health care and governance through e-education, e-health, and e-governance. The scope for digitization, and its attendant benefits, seem to be virtually unlimited.

In each of these areas India's experience has many lessons to offer, both positive and negative. I am very pleased to see from the program of the Roundtable that each of these aspects will be taken up for detailed discussion. This will give an excellent opportunity to the foreign participants present here today to discuss these issues with their Indian counterparts, analyze the experience, and draw appropriate lessons to take home.

6. ADB and Closing the Digital Divide in Asia

Let me turn finally to the Asian Development Bank in the context of ICT development in the Asia Pacific region. Flowing from the ADB's mission of reducing poverty in Asia, and the G8's Okinawa Charter on the Global Information Society, the ADB is committed to bridging the digital divide in Asia. To meet this goal with limited resources, the ADB has adopted a strategy of selective intervention in support of ICT development. The three areas identified for such strategic intervention include (i) creation of an enabling environment for ICT development, (ii) building human resources, and (iii) developing ICT applications and information content in ADB assisted projects.

The first of these strategic thrusts, creating an enabling environment, involves the development of innovative sector policies, strengthening of public institutions, and development of ICT facilities and related information networks. The second strategic thrust is building human resources. This has been started in a small way through learning seminars which we organized together with the ADB Institute and the Government of Singapore earlier this year, and now this Roundtable which we are holding in Bangalore. There is still a long way to go in this field. A third strategic thrust is to strengthen ICT applications and information content in ADB supported investment projects.

Along with these broad priorities ADB is attempting to enhance its own ICT orientation. The INTEGRA project is under implementation to upgrade the digitization of administrative and financial support services, the CLICK project is a planned Center for Learning, Information, Communication and Knowledge, and the DIAL project is Development of Internet for Asian Law. ADB has also just launched on 31 July 2001 the Japan Fund for Information and Communication Technology (JFICT) which will support on a grant basis ICT related activities

which will help reduce poverty, encourage private sector participation in the ICT sector, and promote regional and international cooperation through IT applications.

These initiatives are only markers of a small beginning. ADB recognizes the central role of ICT in promoting development, reducing poverty, and transforming traditional societies and economies. We are therefore fully committed to enhancing our role in this sector in our developing member countries, both to develop ICT capacity and to enhance its applications. Beyond this we from the ADB are here at this Roundtable to listen to you with an open mind, discuss your thoughts and to take away with us a better idea of our clients' needs in the ICT sector, and a better understanding of what role the ADB can best play to help close the digital divide in Asia. I wish you great success in your deliberations and would also like to thank you all for giving me a patient hearing.