Bridging Gaps - Indian Digital Divide

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1. INTRODUCTION

We always welcome an occasion to discuss how our lives may change due to technological development. It is evident that rural India is contributing two-thirds of the total nation's population; thus, this heart of India requires heavy enforcement of prolific strategies, which could uplift the scenario of the nation as a whole. IT has become the chief determinant of the progress of nations, communities & individuals. It is considered crucial that the improvements in our society benefit all citizens. No single group should be ignored or favored. The only way is "to make it better for all".

It may seem paradoxical that modern information technology (IT) has associated in our minds that developed country markets and capital-intensive methods of production have any relevance for a country where many millions still lack basic needs. Nevertheless, there are many efforts underway in India and other developing countries to demonstrate the concrete benefits of IT for rural populations and to do so in a manner that makes economic sense. This paper is very much confined only to rural development.

Section 1 provides conceptual **issues/factors** driving for IT transition in rural development.

Section 2 offers a broad discussion of the **methodologies implemented** by governmental and non-governmental policies.

The **ending section** goes through some **solutions** for these methodologies for a better successful implementation of IT in rural development.

2. IMPACT OF TECHNOLOGY

The impact of Information technology can be felt in many ways than one, the chief ones are in its utilization in the field of:

Promoting regional coordination of the Internet.

Establishing pilot projects.

Using communication for developmental approach.

Assisting stakeholders in advocating for Internet service provision and telecommunication infrastructure.

3. FACTORS DRIVING IT TRANSITION IN RURAL

IT in rural approach is concerned first & foremost to people. It seeks to gain an accurate and realistic understanding of people's strengths and how they develop into positive livelihood outcomes. It is important to note that IT can generate multiple benefits in sectors so as to:

3.1. Provide better usage of natural resources

Agriculture is the main vehicle, which needs a rural policy to be delivered. IT increases share ability of information typically used for improving income-earning opportunities (e.g., weather news for farmers, to enhance sustainable growth in farming).

3.2. Enhance economical status

For both government and private provision, one of IT's main direct benefits is in increasing efficiency by economizing on resource use in the operation of firms as well as in market transactions. There is a need for better matching of buyers &sellers, creation of new markets.

3.3 Education & Employment

Not only is education important, computer education too is critical considering the role that technology plays in our lives, and is likely to play in the coming years. Moreover the youth with adequate computer knowledge could be employed in jobs like data entry and other related areas, providing the prospect of using technology.

3.4. Administration (Governance)

A Government is very much like a large multi-location Enterprise. If we think of intelligent, real-time enterprises, we can also apply the same ideas to enable intelligent, real-time governance. A real-time enterprise, as Ray Lane says, is a company that uses

Internet technology to drive out manual business processes, to eliminate guesswork, and to reduce costs.

3.5. HealthCare

The care for rural residents in their own home as far as possible is sometimes difficult to implement due to difficulties in recruiting and retaining staff in this poorly paid sector.

4. METHODOLOGIES IMPLEMENTED

4.1. Government

Some of the methods implemented by governments of various states:

4.1.1. E Seva

The Andhra Pradesh government has launched ESeva with the aim of providing "one-stop non-stop service" to the citizens. It is, perhaps, one of the most ambitious projects in India, in the realm of government-to-citizen (G2C) services. ESeva offers a wide spectrum of services ranging from Payment of Utilities Bills, Certificates, Permits / Licensees, Transport Department Services to Reservation, Passport Applications and Downloading of Forms. The government is planning to, "reach out up to all the 1,100 mandals (blocks) across the State, [and] it is proposed to deploy up to village in a phased manner."

4.1.2. Bhoomi

The Karnataka government launched Bhoomi to create a service to computerize land records and make them available to the people. Bhoomi is a self-sustainable e-governance project for the computerized delivery of 20 million rural land records to 6.7 million farmers through 177 Government owned Kiosks in the Indian state of Karnataka, which has eliminated red tape and corruption in the issue of land title records, and is fast becoming the backbone for credible IT-enabled Government services for the rural population. Rural land records are central conduits to delivering better IT-enabled services to citizens because they contain multiple data elements: ownership, tenancy, loans, nature of title, irrigation details, crops grown etc. These records were hitherto maintained manually by 9,000 village officials who often extracted a price for issuing copies.

Under the Bhoomi ("Land") dispensation, computerized kiosks offer farmers two critical services (currently): procurement of land records and requesting changes to land title. With 20 million records legally maintained now only in the digital format, Bhoomi has brought the power of IT to dispel the insecurities of the farmers in 27,000 villages. To ensure authenticity of data management, a Biometric Finger Authentication system has been used for the first time in an e-governance project in India. To make the project self-sustaining and expandable, Bhoomi levies user charges.

4.1.3. Information Village

The MS Swaminathan Research Foundation has set up an Information Village project in Pondicherry. In an experiment in electronic knowledge delivery to the poor, they have connected ten villages near Pondicherry in southern India by using an advanced technology and the entire project draws its sustenance from the holistic philosophy of Swaminathan, which emphasizes integrated pro-poor, pro-women, pro-nature orientation to development and community ownership of technological tools against personal or family ownership, and encourages collective action for spread of technology. Value addition to the raw information, use of the local language (Tamil) to facilitate illiterate users) and participation by local people right from the beginning are the noteworthy features of the project. Information provided in the village knowledge centres is locale specific and relates to prices of agricultural inputs (such as seeds, fertilizers, pesticides) and outputs (rice, vegetables), market (potential for export), entitlement (the multitude of schemes of the central and state governments, banks), health care (availability of doctors and paramedics in nearby hospitals, women's diseases), cattle diseases, transport (road conditions, cancellation of bus trips), weather (appropriate time for sowing, areas of abundant fish catch, wave heights in the sea), etc.

4.1.4. EChoupals

ITC is setting up eChoupals across the agricultural belt in India to "offer the farmers of India all the information, products and services they need to enhance farm productivity, improve farm-gate price realization and cut transaction costs. Farmers can access latest local and global information on weather, scientific farming practices as well as market prices at the village itself through this web portal -- all in Hindi. Choupal also facilitates supply of high quality farm inputs as well as purchase of commodities at their doorstep." In Phase I, the goal was to create a physical infrastructure of eChoupals at the village level and create local level ownerships through the identified Sanchalaks. In Phase II, the goal was to get the farmer registered and transacting by selling directly to ITC Ltd. through the virtual market. In Phase III, the goal was to create a full fledged 'meta-market The database, along with identification provided by smart card would enable support for online transactions the total network already include 1,286 kiosks, reaching almost a million farmers across some 9,000 villages. Enthusiasm from farmers is helping ITC to rapidly scale up its network. Current plans include diversification into a wider variety of crops in 11 other states across India. Expanding at a rate of 3 to 4 kiosks a day, the company expects to have 20,000 choupals covering 100,000 villages, or one sixth of rural India, within 10 years (Courtesy: 2001 statistics).

4.2. Non-Government

Some of the non-government projects include:

4.2.1. TARAHAAT and DRISHTEE

Tarahaat and Drishtee are two projects being driven by non-government organisations, focusing on creating entrepreneur (franchisee) driven information kiosks and community

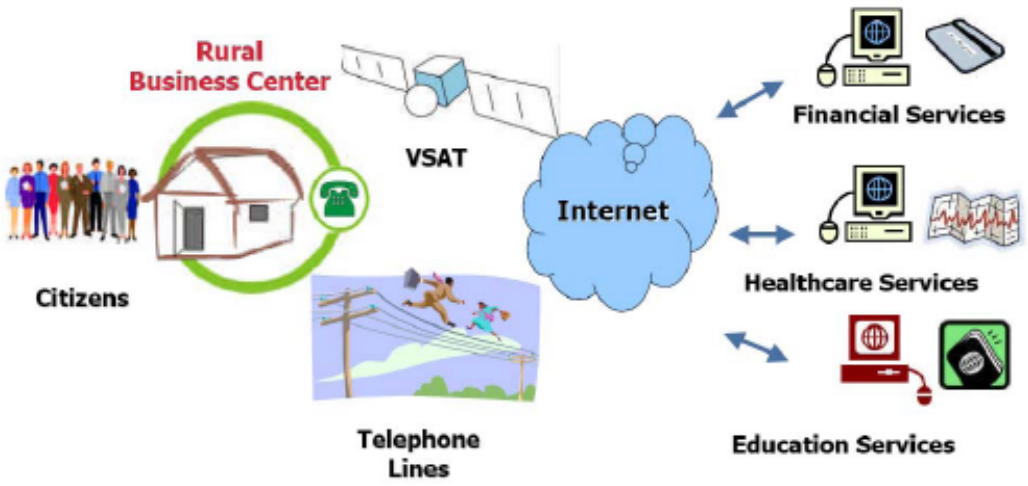
centres in rural areas.

Tarahaat, named after the all-purpose haat (meaning a village bazaar), comprises "a commercially viable model for bringing relevant information, products and services via the Internet to the unserved rural market of India." It is set up as a partnership between Development Alternatives (DA), an NGO focused on promoting sustainable development in India, and its rural marketing arm, Technology and Action for Rural Advancement (TARA). Tarahaat combines a mother portal, TARAhaat.com, supported by franchised networks of village cybercafés and delivery systems to provide a full range of services to its clients. The subsidiary units include TARAdhaba (village connectivity),· TARAbazaar (access to products, services), TARAvan (delivering goods), TARAdak (communications) , TARAguru mentoring and consultancy for mini- enterprises), TARAscouts/TARAreporter (bazaar), TARAcard (credit card facility.)

Drishtee is "an organizational platform for developing IT enabled services to rural and semi-urban populations through the usage of state-of-the-art software. The services it enables include access to government programs and benefits, market related information, and private information exchanges and transactions," similar to Tarahaat.

4.2.2 Rural Business Center

RBC is a joint initiative by **Azim Premji Foundation, MIT, Comat, Wyse and ICICI financial services** towards establishing RBC solutions to bring web based public social and commercial services to the rural part of the country .The design has been tested by ICICI financial services – a giant public sector bank with the support of Comat which provided the blue print of a wider approach to deliver critical services to the rural belt of the country, chalking a blueprint to minimize the digital divide within the country. It integrates micro credit, health, insurance services, health services, educational services etc.



5. FUTURE TRENDS

IT can be better applied to enhance the rural development, improve the standards of living as a whole, with concerns for commitment in health, education, and governance.

5.1. IT in Rural Health Care

The future of IT in rural health network can be viewed in terms of phases of communication enhancement. In the first phase, we should expect to see even more use of email as a principal means of communication. In the second phase, enhanced communication is interacting with the public through electronic media. One possibility was to provide information to the public in their area, as a resource to find resources such as e-health and by using a website to do that. A third phase of enhanced communication is using IT to administer health services. Three networks discussed using IT for clinical purposes. One is clinical application, which gets beyond patient information, especially around drug regimens and things like that. A second use in telehealth included focused on the transmission of data and imaging between practitioners. The third is a desire to set up telehealth with a large regional hospital for the purposes of accessing physicians in the emergency room to help with interpretation of X-rays.

5.2. IT in Governance

The villages are part of the real-time governance supply-chain. A supply chain is only as good as its weakest link. Today, isolated villages are the equivalent of unconnected small and medium enterprises in supply chains. The TeleInfoCentre and Village InfoGrid bring the villages into the governance network, enabling a two-way near real-time flow of information. They form the endpoints, the spokes, and the front office, if you will. They need to be complemented with the automation of the back-office -- the heart of the government, which lies in the state capitals and district headquarters. What governments need is a four-step action plan to move towards the vision of architecting intelligent, real-time information flow architecture: · Messaging and Internet Access for all employees:

Every government employee should have an email ID and access to Instant Messaging. Each of the government locations should be networked. Computing for all: Every government employee needs to have a computer on their desk. The same ideas that are applicable for a TeleInfoCentre (low-cost computers, server-centric computing, open-source software, and support for English and local languages) can be used to build out the computing infrastructure. Collaboration and Knowledge Management: The next step is to make people individually more productive and make teams work together more efficiently. This can be done via the use of workflow software and tools to aid decision-making. · Business Process Automation: The essence of governance is about interacting with citizens and businesses (akin to customer relationship management). The focus needs to be on the core business processes, creating an event-driven architecture with the focus being not on routine information management but on handling exceptions.

5.3. IT in Education:

Education plays a paramount role in the process of economic development. Besides being instrumental in development, it is also an end in itself because it helps people lead better

lives. For broad-based sustainable economic development, primary education is critical. Neglect of primary education is endemic in developing nations. Primary education is a public good.

To briefly review the broad scope of the problem of primary education, literacy is only 60% in rural India. For rural areas are male literacy is 71% and female is 47%. About 36% of all 7-14 year old children are illiterate. That is, the total population in rural areas that needs primary education is 150 million. (Courtesy: Census of India 2001.) To provide primary education, India requires seven million teachers if one were to have a 1:50 teacher to student ratio. Not only, that number is formidable, the problem is compounded by the fact that these teachers are mainly required in the rural areas where the current number of qualified teachers is extremely low. Not only is education important, computer education too is critical. While no computer can replace a good teacher, it is not always possible to get good teachers in schools in developing nations, especially in the interiors. This is where computer-enabled education can complement the teacher in the classroom. Besides, a "digital library" and the Internet can help enhance and widen the learning process.

A school is an ideal location for a TeleInfoCentre (TIC) because it is already seen as a bastion of knowledge. The TIC can be located at every primary and secondary school. During school hours, the computers are used to complement the teacher in providing IT and IT-enabled education to the students. After school hours, the center can provide community services, some of which can be priced. This approach has multiple benefits: Computers will attract students to schools. As has been said: "You bring computers into schools so that you bring children to schools." During school hours, the multiple computers in the TIC become educational terminals for the children, complementing the teacher

After school-hours, the computers could be used for various community services, provide literacy for the village residents, creating employment opportunities, thus providing means for additional revenue serving the needs of the village as a whole· By making computers available in schools at the point of delivery of education, TICs thus play a critical role in the facilitation of primary and secondary education. In addition, the same platform can be used for delivery of adult and vocational education. The Rural Infrastructure and Services Commons (RISC) center, which would be within a distance of 10-15 kilometers of the TICs, would function as a local support center. The RISC is where teacher training can be conducted on a regular basis, given the current state of the infrastructure in villages.

EDUSAT

Nearly 3 decades after it carried out the world's first effort to reach instructional programmes to far-flung villages using direct TV broadcasting over satellite, the ISRO (Indian space research organization) has sent aloft EDUSAT. ISRO also initiated projects for distance education and training, the launch of EDUSAT could lead to revolution in the education sector. Students in rural areas stand to benefit the most; it will be very beneficial considering the shortage of teachers especially in frontier areas of technology along with primary education.

6. CONCLUSION

The President Dr. A.P.J. Abdul Kalam has said that the seven hundred million people living in the rural areas need an unique rural development model called PURA which envisages provision of three connectivity's namely physical connectivity, electronic connectivity and knowledge connectivity leading to economic connectivity. For providing the knowledge connectivity to the PURA (Providing Urban Amenities in Rural Areas) complexes, Village Knowledge Centers will act as frontline delivery system.

Adopting a proactive strategy, and acting to bring the Internet to rural and agricultural communities in developing countries will help enable rural people to face the unprecedented challenges brought on by the changing global economy, political changes, environmental degradation .To deal with these challenges, and to make critical decisions, people at all levels of society, must be able to access critical information and communicate. All the organizations discussed in the paper face common issues of implementation, but differ in scale, connectivity technologies, services offered, revenue models and organizational structures.

In the long run, bringing rich information to the population of rural India, whether in the form of education, market prices, market opportunities, and more, can only have positive impacts on the material well being of rural masses. The time to act to support Internet knowledge and communication systems in developing countries is now. Today we truly live in a global village, but it is a village with elite information "haves" and many information "have-nots." With the new technologies available to us we have an opportunity to change this.

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