

Unleashing Rural India's Economic Potential-The Role of ICT

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Inclusive Growth and IC

With the new Government assuming office, there is a renewed emphasis on inclusive growth and emancipation of the common man. Also apparent is an increased focus on mainstreaming rural India. This includes steps to bridge the urban-rural digital divide. The President of India in her speech to the joint session of the Parliament on June 4th 2009, stressed upon the need for socially, economically and culturally inclusive growth and equitable development. She spoke about the consolidation of the existing flagship programmes for employment, education, health, rural infrastructure, urban renewal and about the introduction of new flagship programmes for food security and skill development. In the context of ICT as a tool for rural empowerment, she announced a target of 40% rural teledensity in the next five years and expanding broadband coverage to connect every *panchayat*¹ to a broadband network in three years.

As of March 2009 rural teledensity was only about 15 percent against urban teledensity of almost 89 percent and rural broadband penetration was negligible. Though comparatively rural teledensity has increased faster than urban teledensity over the past decade, the Indian digital divide is still vast and challenging. While it is already an oft repeated fact at both national and international levels, a recent study by ICRIER² in the *Indian* context has once again underlined the importance of mobiles in economic empowerment of low-skilled labour force and the economically disadvantaged. The study suggests that Indian states with a 10% higher mobile penetration would enjoy an annual average growth rate that is 1.2% higher than those with lower teledensity. It also highlights the value of market prices and weather reports for the rural population.³ Though mobile telephony does offer several socio-economic benefits to rural India and helps overcome infrastructural constraints (poor roads, lack of access to health, education and information etc)⁴ to some extent, it is broadband services delivered either through fixed or mobile telecommunications infrastructure that have the potential to truly bridge the digital divide and empower rural Indians.⁵ High speed broadband connectivity for rural areas is a vital component of inclusive growth. It can provide villagers with much needed access to financial inclusion, health and education services. Broadband connectivity can help ensure leak-proof transfer of subsidies/welfare payments and constitute a vital channel for spreading awareness and facilitating ground level feedback on government schemes, thereby enhancing their efficacy.⁶ The lack of such awareness about these schemes gravely reduces their efficacy. For

¹ Village level local Government office

² International Council for Research on International Economic Relations

³ Financial Express dated January 20 2009

⁴ For more details please see 'Dialing in Rural prosperity through Universal Cellular Connectivity,' Archana Gulati, *Kurukshetra*, November 2008

⁵ See also 'Broadband Services for Rural India-Connectivity and Content,' Archana.G.Gulati, *Kurukshetra*, April 2009

⁶ 'A pro-people agenda in telecom', T.K Arun, Economic Times, 18 June 2009

example a National Sample Survey Organization (NSSO) study reveals that that 71% of the farmers do not even know about the Government's Minimum Support Price (MSP) scheme!) The need for multimedia content and communication is much more important in the rural context on account of low literacy levels and innate connectivity requirements of rural telemedicine (both human and veterinary) and e-education etc. The above mentioned postulate about the beneficial aspects of broadband connectivity is seconded by a World Bank report which has stated that for every 10% increase in high speed internet connections, there is a 1.3% increase in economic growth. This report goes on to highlight that broadband can create youth employment, increase productivity and exports and promote social inclusion⁷. There is no doubt that broadband enabled services can play a major role in unleashing the economic potential of rural India.

Commentaries on the importance of achieving universal ICT connectivity have often referred to the sizable potential funding available by way of Universal Service Obligation Fund (USOF) which was set up with effect from 1.4.02 with the specific mandate of spread of affordable rural telecommunications. The author has previously written articles on the past, present and potential utilization of the USOF India towards promotion of rural ICT⁸. The USOF functions under the Administrator USOF as an attached office of the Department of Telecommunications (DOT). In this article it is intended to delve further into the manifold avenues by which ICT may serve as tool of rural empowerment and also to touch upon the existing and possible facilitative role of the USOF in this regard. What must be necessarily understood is that for ICT to deliver its promised transformational impact on rural India both connectivity and content must be addressed. Also not to be ignored is the power supply to run ICT services and devices without which rural ICT infrastructure will be of limited utility.

Affordable Connectivity-The Necessary Condition

The USOF has a number of ongoing schemes for the spread of rural telephony and broadband. Till date ⁹ around 5.58 lakh ¹⁰ Village Public Telephones (VPTs), 40,690 Rural Community Phones (RCPs) ¹¹, 63.82 lakh new Rural Household Direct Exchange Lines (RDELs)¹² and about 109 lakh existing RDELs¹³, have been supported from the Fund. There is also a scheme to replace old technology Multi Access Radio Relay (MARR) VPTs with reliable technology under which 1.83 lakh MARR VPTs have been replaced so far. Under the shared mobile infrastructure scheme where mobile towers are installed and shared by three mobile service providers with USOF support, a total of 5,666 towers have come up so far¹⁴ and another 10,000 new towers are planned for Phase II of the scheme. The recently launched wire line broadband scheme has a target of subsidising about 9 lakh connections and

⁷ www.voanews.com/English/2009-06-30-voa48.cfm

⁸ Please see, 'Every Village to be Connected by Telephone,' Archana.G.Gulati, *Kurukshetra*, October 2006

⁹ As on 30.4.09 (source: Telecom Live, July 2009)

¹⁰ A lakh is 0.1 million

¹¹ VPTs and RCPs are public access telephones

¹² Installed after 1.4.05

¹³ Installed before 1.4.05

¹⁴ The target is 74440 towers which is likely to be achieved this year.

28,000 broadband kiosks while leading to capacity creation for 18 lakh rural broadband connections. In this scheme Customer Premises Equipment and Computer/Computing Devices are also being subsidised.¹⁵ Up to 31.3.09, there has been a total subsidy outflow of Rs 7971.44 crore towards these USOF schemes. In addition, USOF is soon to launch a scheme for provision of subsidy for shared OFC bandwidth provision at the sub district level. The state of Assam has been chosen for initial sub-district OFC roll out and it is envisaged that this project will be followed by similar roll-outs in other states in a phased manner. Once 3G and Broad Wireless Access (BWA) spectrum auctions are completed and wireless broadband becomes possible, USOF would launch a wireless broadband subsidy scheme. Thus the issue of telecommunications connectivity is being tackled effectively by USOF. By mandating the sharing of subsidized infrastructure and building in obligatory discounts on rental/leasing charges, USOF schemes make it possible for rural service providers to lower end user charges in keeping with lower paying capacities of rural customers. Realizing the importance of innovation and new applications of existing technology in the rural setting, USOF also sponsors/supports pilot projects for rural and remote area technologies/applications. This includes pilots for new technologies such as micro BTSs (Base Transceiver Station) or shared BTSs which would be particularly useful in the rural context

The Missing Link-Power

In India out of 5.93 lakh inhabited villages, fewer than 4.8 lakh villages have electricity. A village is considered electrified even if 10% of the households have electricity¹⁶. Further the supply is more often than not restricted to a few hours a day. Recognizing that power is a major constraint in rural India, USOF has worked with the Ministry of New and Renewable Energy (MNRE) to initiate a project for solar powering of one lakh VPTs and for subsidizing installation of renewable energy installations in its shared mobile infrastructure sites on pilot basis. The possibility of including subsidised solar power installations in future roll outs of USOF's shared mobile infrastructure schemes is under active consideration. Apart from saving on operating costs by way of diesel transportation and consumption, this option would also be environmental friendly. The initial capital cost however seems to have deterred the large scale adoption of solar energy for BTSs, especially shared ones. Also, recognizing the power problem at the individual subscriber end, efforts are also on to support a pilot scheme for rural mobile charging stations. There is no doubt that more needs to be done to supply solar/renewable energy charging solutions to rural households. Without these, even the universal availability of phones or broadband enabled computers in rural areas would not be very meaningful.

Relevant Content Completes the Equation

When it comes to rural specific content and value added services (VAS) there are two parallel realities one comes across. On one hand lies the seemingly daunting challenge of catering to the specific needs of largely illiterate and information-starved villagers across the country who speak several different languages and on the other, is the existence of hugely

¹⁵ For more details visit www.dot.gov.in

¹⁶ 'Running out of charge', K.Venugopal, Business Line, 11 February 2009

successful pilot projects which have convincingly demonstrated the tremendous socio-economic benefits of rural VAS. Thus, we have proven cases such as ICT's e-Choupal, Kerala and Government's Akshaya project for internet access to show us the way. However, much more needs to be done to scale up and universalize rural India's access to useful broadband enabled services.

In case of mobile phone based services, Central and State Government's and private players are increasingly tapping into this widely available medium. An example of the same is the *Kisan* Call Centre service recently launched by the Directorate of Extension, Department of Agriculture and Cooperation which offers expert advice on agriculture related problems/queries. In the private sector, a good example is Bharti-Iffco's joint venture whereby cheap mobile handsets costing less than Rs 2000(\$ 40) are bundled with mobile value added services such as free daily voice messages on market prices for their produce, farming techniques, weather forecasts, dairy farming, animal husbandry, rural health initiatives and fertilizer availability.¹⁷ Another case in point is Tata Teleservices (TTSL) tie up with Impetus technologies called *MandiBhav*¹⁸ which will enable farmers and commodity traders get spot prices from all markets for commodities of their interest in real time in the local language. Also, companies such as Reuters and Connect are already providing weather forecasts, market prices and expert advisory services to farmers.¹⁹ One such initiative has recently been launched in a tie-up between Reuters Market Light and the Punjab Government to provide mobile information services to farmers in relation to 17 crops and commodities including varieties in 60 *mandis*²⁰ across the state²¹. Last but not the least, another noteworthy endeavour is Swaminathan Foundation's famous project which demonstrated effectively the beneficial economic impact of providing Kerala fisherman information on wave heights, wind velocities and location of fish on their mobiles besides enabling m-marketing. An interesting example outside India is Cell Bazar. Designed originally in MIT's Media lab, this project has been successful in Bangladesh where villagers are using it to buy and sell products. As rightly pointed out by Kamal Quadir its founder, making this initiative a success is not easy as it involves mediation by an English-literate local village entrepreneur and a fair amount of local effort in teaching villagers to use the service. However, on the plus side, it offers a true win-win situation for two way trading for rural markets sans the loss of income to exploitative middle men.

Pilot studies for both mobile and broadband content have shown a healthy demand from villagers for agriculture, market and weather related information, e-marketing, tele-education and e-health services. The desire to learn English and other subjects through mobile/internet application is particularly strong and has a significant revenue potential in rural India. Recognizing that relevant content in local languages is necessary to make rural broadband services meaningful, USOF has encouraged the adoption of a franchisee model in

¹⁷ 'Telcos gear up for new uses of mobile phones in the years ahead,' The Mint, May 21 2009

¹⁸ Market Price

¹⁹ 'Tata Teleservices, Impetus join hands to launch MandiBhav for farmers,' Preeti Parashar, Financial Express dated January 22 2009

²⁰ Wholesale Market

²¹ "Mobile Information Services for Farmers,' Financial Express dated October 22 2008

partnership with professional content aggregators for the subsidized broadband kiosks being rolled out by BSNL²² under USOF's wire line broadband scheme. Under its agreement with USOF, BSNL is to roll out about 28000 rural broadband kiosks within five years. These kiosks are meant for access to basic browsing and various types of commercial value added services including entertainment, information, tele-education and tele-medicine. They are to be outfitted with facilities for video-chat and conferencing, printing and scanning and also back up power supply.

The Department of IT's (DIT) experience with its CSC scheme's underlines the importance of content. Out of the planned total of one lakh CSCs, 22,000 CSCs had been established by January 2009. The states of Haryana, Jharkhand and Sikkim had completed their CSC roll out. However it has been reported that there has been limited utilization of these CSCs on account of lack of sufficient e-government services which they were supposed to provide. This lack of viability is worrisome at a juncture when the government is ambitiously planning to enhance the target to 2.5 lakh CSCs and rename them as *Bharat Nirman Kendras*²³. It is perhaps in response to this situation that the DIT has decided a float a new company called CSC e-Governance Services India Ltd . This company will provide back end services to the CSCs. With 44.5% State Governments' stake, 44.5% Service Centre Agency (SCA)²⁴ stake and 11% institutional investor stake, this company will introduce economies of scale into the working of CSCs as far as tying up with content service providers such as banking and e-learning etc is concerned. This national level tie up of e-government and private content and its retail distribution to SCAs is expected to make the business case of sale of applications viable for both content suppliers and SCAs²⁵. This is a welcome step and demonstrates that the Government must constantly innovate and respond to implementation feedback and ground realities. The author firmly believes that while the government must take the lead, once a fair degree of rural broadband penetration is in place, rural specific content development will pick up pace, just as T.V penetration amongst the masses led to development of appropriate commercial content. The rural market is being seen as a major contributor to the revenues of FMCGs and other products such as lower end cell phone sales. It will be a matter of time before rural markets are increasingly tapped through the channel of ICT as a cost-effective way of connecting with rural populations both as buyers and as sellers of goods and services. A recent survey by the market research firm IMRB and Internet and Mobile association of India (IAMAI) has found that already 15.1 million villagers know how to use the internet. Amongst these, 5.5 million have occasionally accessed the internet while 3.3 million are active users. Underlining a point made earlier in this article, IMRB's Vice president has highlighted the importance of rural content being vernacular, in visual symbols, graphics and with rich media applications.

When it comes to the language and literacy barrier, IT giants such as Microsoft, Oracle and IBM and India's Centre for Development of Advanced Computing(C-DAC) are

²² Bharat Sanchar Nigam Ltd , the incumbent telecom service provider

²³ Centres of Development for India

²⁴ Companies that have bid for CSCs

²⁵ 'Now an SPV for rural uplift', Suarbi Agarwal, Financial Express dated 30 June 2009

steadily working towards creating vernacular software translators and interfaces including operating systems, search engines, voice recognition systems, messengers and virtual keyboards. With growing volume of e-government, banking, commerce, insurance etc targeted towards rural India, this vital market segment will become increasingly important.²⁶

Other positive Spin-Offs of ICT Enablement- Rural BPOs, Empowerment for Rural Women, Financial Inclusion and Facilitation of Other Government Initiatives (Awareness, Feedback and Targeted Subsidies)

Apart from serving as a vital connection to essential information, markets, government, health and educational services with their consequent multiplier effects on rural polity, society and economy, rural ICT penetration has other very useful positive spin-offs as mentioned below:

India is already the world leader as far as IT and IT enabled services is concerned. Interestingly, the tremendous potential of *rural* back offices is now being realized and reported. Confirming this, is a Nasscom-AT Keraney study that says that 2 to 3 million of the IT-BPO jobs over the next decade would be located not in the current seven leading cities but in other non leading locations. As long as we are able to provide reliable high speed broadband access, the rural BPO business will grow manifold. These BPOs offer companies the prospect of hiring staff at lower salaries and with lower attrition rates. Many successful examples of rural BPOs already exist such as Desi Crew Solutions Pvt Ltd. This venture was incubated by Rural Technology & Business Incubator of IIT Madras. Gram IT of Andhra Pradesh and Vintes Solutions Pvt Ltd are other rural BPOs which suggest that cost savings of up to 40% are possible when BPOs are located in rural areas.²⁷ Karnataka based Rural Shores emphatically stresses the competitive nature of BPO segment and the need to retain cost advantages vis-à-vis countries like China by moving to rural India. It has ambitious plans to expand operations into Tamil Nadu and Bihar.²⁸ Lesser known success stories that demonstrate the surprising cost-cutting potential and skill level of rural BPOs such as Ramakrishna Tummala's BPO in Kavur village of Guntur workers also continue to be reported regularly²⁹. The rural BPO is a great opportunity for business to reduce costs and revitalize the rural economy. A 100 seat rural BPO can bring in Rs 40-50 lakh into the rural economy, helping to create valuable benefits such as rural livelihoods, stemming of urban migration and mainstreaming of rural India into the knowledge economy. The main challenges are not training and physical infrastructure but reliable telecommunications and power. If these are tackled effectively through broadband connectivity and support for alternative energy solutions, it would be half the battle won.

An interesting facet of the Rural BPO experience is the positive spin-off by way of women's empowerment. Even in ultra conservative Northern states of India such as Rajasthan all-women BPOs have been successfully set up with impressive high quality and

²⁶ 'Computing gets a *Desi* Touch,' Surabhi Agarwal, Financial Express, dated February 19 2009

²⁷ 'From school to back office: the rural road to outsourcing', Financial Express dated April 30 2009

²⁸ The Mint dated June 18 2009

²⁹ Telecom Live, July 2009

low cost benefits. In the South this model is empowering the lives of rural women many of whom are first generation white collar workers. Thus 45% of Andhra Pradesh based rural BPO, Gram IT's employees are women, 50% of whom are mothers and would have otherwise been only housewives, given the absence of employment opportunities for educated women in villages.³⁰

The success of the National Rural Employment Guarantee Scheme (NREGS) and the increased thrust of the government towards ensuring direct flow of food and fertilizer subsidies, pensions and other benefits to target rural populations have imparted urgency to the ongoing efforts to address the issue of financial inclusion. Only 5.2% of Indian villages have bank branches. ICT offers an excellent means to achieve rural financial inclusion. An internationally renowned example in this regard is Safaricom Ltd's m-PESA. In this model working successfully in Kenya, registered account holding mobile users can perform secure m-transfers of cash by purchase and sale of airtime from m-PESA dealers. Cashing in on low penetration of bank branches(owing to high operational costs) but high penetration of mobiles, m-PESA in partnership with Kenya Commercial Bank has garnered 6.5 million customers(one in six Kenyans) in just two years. Though the cost of building and administering a network of 9000 trustworthy agents to carry cash needed to complete the transaction chain means that the venture is yet to become profitable, the mobile company sees it as a sure-shot way of retaining long-term customer loyalty in the face of cut-throat competition. Studies have revealed that M-PESA has allowed farmers to diversify out of subsistence agriculture into small businesses such as furniture making³¹. In India m-banking is so far more of an urban phenomenon restricted to bank customers. Nevertheless RBI has been stressing on ICT enabled extension banking through its Lead Bank and Business Correspondent schemes. The idea is to allow the poor to open zero balance, no frill accounts with the help of mobile devices which provide biometric authentication and/or facilities to swipe smart cards. These devices access the government/bank servers at the back end through telecommunications infrastructure. This makes it possible to not only pay subsidies direct to rural beneficiaries but also to enable micro credit and insurance transactions. In this regard the USOF is in talks with BSNL to undertake a pilot run of such a concept in the states of Himachal Pradesh and Rajasthan. Coupled with subsidised broadband connections under its wire line broadband scheme, such a device called the Rural Public Service Terminal is to be offered to self help groups (SHGs) which can with the help of a back end content aggregator and transaction facilitator sell banking, insurance and other financial services to rural customers for a fee. The device in question will also offer other VAS such as booking of railway, bus and airline tickets, mobile recharges and downloads and utility bill payments. The USOF scheme is aimed at women's SHGs as a gender empowerment initiative allowing these SHGs to earn their livelihood through commissions on sale of online transactions. This device can also function as a mobile Public Calling Office. When combined with the National User ID initiative and the increasing use of smart cards being planned by the Central Government, such ICT enabled, secure access to online services would be a boon for both rural populations and the Government in its effort to reach out to and mainstream the former.

³⁰ Telecom Live, July 2009, pp50-54

³¹ 'Africans cash in on the mobile money revolution,'The Mint dated June 2 2009

Taking Stock and What Lies Ahead

A lot has already been achieved in rural telecommunications connectivity especially in the past decade. There is no doubt that there are still several villages which are yet to be covered with at least wireless telephony and we have a long way to go before high bandwidth OFC networks reach even bigger villages. Yet the Government is steadily working in this direction. At the same time, to make good use of the increasingly available ICT infrastructure, we need to add value by way of encouraging the development and affordability of content. A lot could be achieved by scaling up and adapting existing applications which have proven their worth in one district/state rather than constantly and wastefully re-inventing the wheel. The Government needs to gear up at central and state levels to provide all types of mobile and internet enabled government, education, health and information services. All Government schemes aimed at rural development must necessarily have an ICT enabled awareness and feedback component accessible to target beneficiaries.³² The USOF which thus far has concentrated largely on infrastructure could encourage bundling of content with the sale of mobile connections from its subsidized shared mobile infrastructure schemes. Perhaps providers of useful suites of rural content applications (relating to education, agriculture, financial services, commodity markets etc) could be empanelled by USOF and the service bundle appropriately subsidized for the rural customers. Rural broadband content also needs to be similarly encouraged. M-banking and ICT assisted extension banking are absolutely critical for rural development and must be promoted through necessary government support. There is no doubt that once their value is widely demonstrated and sufficient volumes of users are created a 'tipping point' will be reached after which rural ICT applications and the underlying infrastructure would become commercially viable and self-sustaining.

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³² See 'Ensuring Inclusive growth,' Archana.G.Gulati, *Kurukshetra*, June 2008