Chapter 9

Telecom and Information Technology

9.1. Introduction

It is widely recognised that the potential of increasing welfare in rural areas is substantially enhanced if there is a greater telephone and Internet access in these areas. Telephone provides voice connectivity and can become useful for gathering economic information, requesting emergency services and keeping in touch with migrant relatives. With Internet telephony all of the above can be realised in an inexpensive manner and with Internet network many services can be offered to the rural population at an affordable price.

The adoption of e-governance will give a fillip to IT development in the state as the government becomes one of the biggest users of the services and provider of content to people at their doorstep. The government is yet to implement its e-governance policy whole heartedly. What is probably not evident so far is an attempt to link and integrate front end and back office system. The state's policy to establish Software Technology Park to attract private investment in telecom and IT related services is still driven by facilitation, provisioning of adequate related infrastructure and governance issues are likely to dominate the fiscal incentives oriented programmes.

The chapter is organised as follows: Section 9.2 discusses the current status and performance of the sector in the state. Section 9.3 discusses the recent initiatives and future plans for the sector in the state. The way forward is brought out in Section 9.4. The last Section 9.5 discusses the conclusions and recommendations.

9.2. Status and Performance of Telecom and Information Technology in Uttar Pradesh

Uttar Pradesh is divided into two telecom circles—Uttar Pradesh (West) and Uttar Pradesh (East)—for administrative purposes by the Central government. Bharat Sanchar Nigam Limited (BSNL), the erstwhile (DTS), and Videsh Sanchar Nigam Limited (VSNL) held a monopoly in their respective areas until March 2003. BSNL provided services such as basic telephony, telex and leased lines. The sector which was unbundled both, horizontally (separation of services by markets like basic, cellular, radio paging, etc.) and vertically (separation of long distance provision from basic services) is witnessing unification of services from private telecom service providers such as Reliance Infocomm and Hutchinson Essar. Private sector dominates the market of value added services along with limited value added services provided by BSNL and VSNL in both the circles. The sector is undergoing a major structural change. The private sector provides basic services, national long distance services, international services and other value added services in a few cities and dominates the cities adjacent to Delhi.

The telecom network spread of basic services to rural areas is complete.[1] Rural areas close to urban conglomerates have access to value added services such as internet, paging, cellphones, etc.

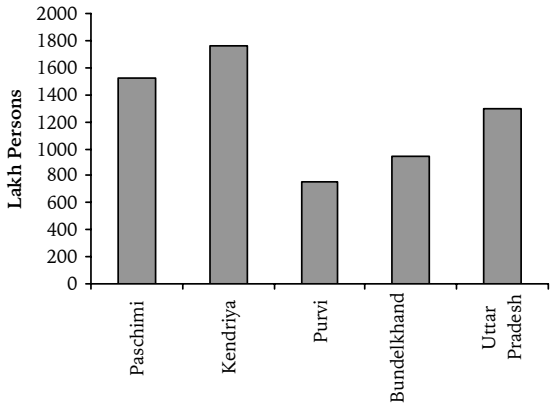
Financing of the telecom sector has been traditionally through Central government owned companies. As the ministry owning these companies was cash rich, there were no financial constraints. The private sector raised funds from the market and

1. BSNL announced a scheme in October 2003 which works out to be free for customers willing to take basic phone connections and opting for self-internal wiring, and who not take the instrument from the department.

financial institutions, and some private service providers faced difficulty in raising funds due to lack of credibility.

FIGURE 9.1

Telephone Connections/Lakh Persons



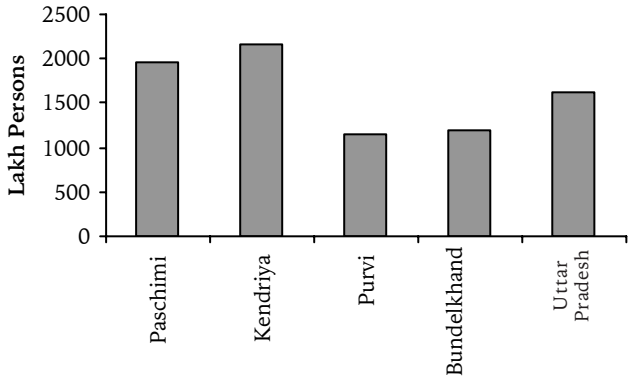
Source: Annual Report of Department of Telecommunications (GoI) 2001.

9.2.1. Status of Telecom and IT Network in Uttar Pradesh

Fixed Services: BSNL was the only fixed service provider in Uttar Pradesh until 2000. It expanded network capacity at a scorching pace (21%-22% between 1998-2000). Now it aims at expanding at the rate of 16 per cent or more in the coming decade. It has set up an extensive Optical Fibre Cable (OFC) network and utilises microwave links to provide connectivity to smaller towns.

FIGURE 9.2

DELs/Lakh Persons



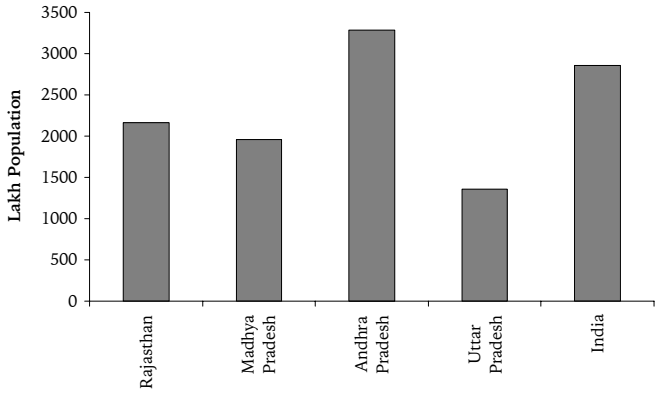
Source: Annual Report of Department of Telecommunications (GoI) 2001.

Regional data shows that Paschimi and Kendriya regions in Uttar Pradesh have better connectivity compared to Purvi and Bundelkhand regions (Figures 9.1 and 9.2).

The Telecom Regulatory Authority of India's (TRAI's) recommendation of free entry in basic fixed service proved to be a boon for the state, removing restrictions on entry, encouraging accelerated service expansion in areas thought to be uneconomic.[2] BSNL spread its network at breathtaking pace between 2001-2003 before Reliance Infocomm started providing service in the state.

FIGURE 9.3

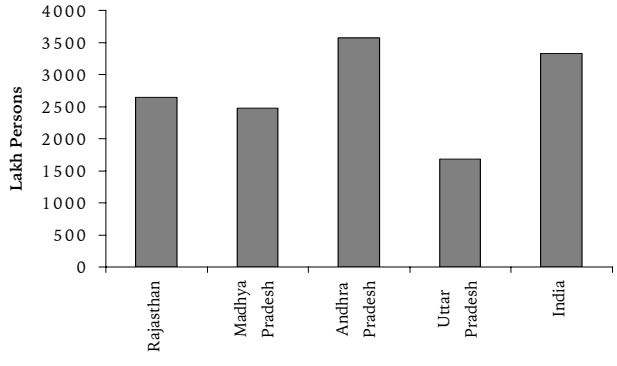
Telephone DELs Per Lakh Population-Dec. 2000



Source: Annual Report of Department of Telecommunications (GOI) 2001.

FIGURE 9.4

Telephone Connections Per Lakh Persons-Aug. 2000



Source: Annual Report of Department of Telecommunications (GOI) 2001.

2. The SBI Branch in Village Bilsuri, Bulandshahr had applied for a telephone connection in 1980 and did not get it for 20 years (NDTV News, March 24, 2001).

9.2.2 Performance of the Sector

The primary objective of deregulating telecommunications is to attract private investment and make it available available to a large section of people at an affordable price. Enhancement of consumer choice is another important objective. If consumers are not satisfied with one service provider, they have a choice to go to another. This technology driven sector has seen unparalleled growth in the last decade.

Basic Services: Compared to other states, in Uttar Pradesh, direct exchange lines and telephone connections per lakh persons is lower than in neighbouring states such as Rajasthan and Madhya Pradesh and substantially lower than Andhra Pradesh (Figures 9.3 and 9.4). In terms of telephone connections per lakh persons Uttar Pradesh has just half of the national average.[3] Madhya Pradesh, Rajasthan and Andhra Pradesh introduced competition in basic services much earlier and this may be one of the reasons that they have comparatively better telecom connectivity. The scenario is however, changing rapidly as Reliance Infocomm plans to expand its network nationwide.

Cellular Network: was underdeveloped in the state and was limited to a few large cities until BSNL started providing cellular services in 2002. One service provider could not even raise enough funds to transfer its licence to revenue sharing basis and had to close down services in the Uttar Pradesh (West) circle in 2000. At present, the dominant cellular service provider in the State is BSNL.[4] The cellular services market has been estimated to grow at a compound annual growth rate (CAGR) of more than 20 per cent until 2005 in Uttar Pradesh. Changes in market structure, as a result of regulatory pronouncements and in technology, have forced cellular operators to re-examine their expansion strategies. Escorts Telecom (Escotel) and Bharati Group have decided to provide cellular services in Uttar Pradesh (East) and Uttar Pradesh (West) circle respectively.

Internet: Internet access had limited penetration in the state except in NOIDA. In spite of a liberal licensing policy Internet Service Provider (ISP) services have not grown rapidly. High competition has resulted in low Internet access charges. Low personal computer (PC) penetration could be an obstacle for medium-term growth. Both BSNL and Reliance Infocomm have a veritable national backbone of a telecom network passing through the state, capable of providing Internet services.

Village Public Telephones (VPT): By March 2000, 60 per cent of villages had been covered under VPT by BSNL and by December 2001, most villages were covered by VPT.

9.3. Recent Initiatives and Future Plans

NTP99, USO and VPT: Providing connectivity to the uncovered villages by 2002 is a target envisaged under the universal service obligation set in the New Telecom Policy, 1999 (NTP99). This is to be financed by funds raised through universal access levy which is a fixed percentage of the revenue earned from all operators. However, the Central government is silent about the mechanism of providing Universal Service Obligation(USO) funds for VPTs. According to Planning Commission estimates, the subsidy required per VPT per annum is Rs. 31140.[5] Technology and low traffic are the major reasons for subsidy. It has been observed that the traffic and revenue have shown a substantial increase as STD facility is provided to the VPT. Until December 2001, about 1.4 per cent of the VPTs had STD facility.

Fixed Line Business: Opening up of fixed line business to unlimited competition should accelerate the spread of telecommunication network in the state. The telecom network covers almost all areas in the state and competition between BSNL and private service providers provide a choice to consumers. Reliance Infocomm has the license to provide telecom services in the state and has an optical fibre network connecting all the major towns. It also plans to set up 10000 information kiosks in the next three years in the state to make the Internet more accessible to the public.

Broadband Network: Optical Fibre Cable (OFC) network which provides the backbone to broadband network is provided by BSNL and Reliance Infocomm.

Gas Authority of India Ltd. (GAIL) is laying optic fibre cables for the telecommunication system between Delhi-Chandigarh, Bareilly-Kanpur and Mumbai-Pune.

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3. A worrying sign is that outstanding dues from customers crossed Rs. 200 crore in 1999-00 for the first time in Uttar Pradesh.
4. In Uttar Pradesh (East) and Uttar Pradesh (West), BSNL's market share is 62.5 per cent and 35.7 per cent respectively (September 2003 subscriber base).
5. The Planning Commission estimate is substantially different from the TRAI estimates of Net Universal Service cost. For 2001-02, TRAI estimates range from a surplus of Rs. 22616 (i.e. no subsidy required) to a subsidy of Rs. 76433 per annum per rural phone. Assumptions vary from recovery of operational expenditure only to recovery of both, the capital and operational expenditure at 24 per cent.

The major cities planned to be covered in the North-west-south telecommunication corridor in due course of time include Ghaziabad, Moradabad, Kanpur, and Lucknow. Powergrid also has a plan to lay an OFC link across the state.

To provide impetus to the optical fibre network in the state, the state government has laid down The Uttar Pradesh Public Land (Permission for placing and maintaining optical fibre cable) Rules, 2001. Under the rules a licence is provided for a maximum period of 15 years, for laying of optical fibre cable on public land. In lieu of the permission, the licencee is obliged to provide two mbps bandwidth to the offices of the state government and local authorities over the licence period free of charge.

9.4. Way Forward

It is widely recognised that since telecom and information technology (IT) are Central Government subjects there is little that a state government can do to improve the sector. This view is not entirely true and a state government can play enabling role to promote the sector.

Impact of Telecom Network on the Economy: The economy will gain substantially if and when the cost of acquiring information will reduce to almost zero. In the next five years three elements are going to revolutionise the sector. First, as the broadband network starts operating, information will be available instantaneously. Second, wireless devices will make information available any time, anywhere to everyone. Third, the information will be available in the local language. In course of time one could hear as well as read the information, implying a diminished role of intermediaries.

Presently, at the centre of the IT revolution is the computer, a complicated device and to a certain extent user-unfriendly. As we are moving towards a convergence era, product developers wish to develop information appliances which are designed specifically to meet user needs. Unlike the PC, the technology this contains will be invisible and subordinated to the function of providing information to the user. Such devices will be heavily dependent on wired and wireless network. Probably, commercial availability of Simputer or 3G wireless phones may help in bringing advantages of IT to the masses.

If one is to draw any lessons from South Korea, broadband usage can increase exponentially in a couple of years. Fibre-optic cable remains the fastest channel for broadband access. It is argued that there is always a chicken and egg situation between content and wire provider. There should be a critical mass of users before content and application providers start getting in to service a big customer base. What accelerated the pace of broadband users in South Korea was a combination of factors like pricing, market liberalisation and an aggressive government policy to promote the use of the Internet.

Policy options for the state government: A network-based economy can be influenced by the state government through policy, and user-oriented action plan. Policy interventions are required for changes in labour laws,[6] providing right of way and making provision for wires for present and future expansion. For example, in Greater NOIDA pipes are already being laid for such expansion while roads are under construction. Similarly, in other towns and cities where roads are being built, such provisions need to be made. The policy stance with respect to software technology parks (STP) to attract private investment in telecom and IT related services are still driven by the 'old' style state industrial policy mindset whose cornerstone is to provide fiscal incentives. In the new environment of a network economy, probably this policy, just like industrial policy, will fall short of expectations.[7]

BOX 9.1

IT Policy of GoUP (1999)

The objectives of the policy are to accelerate development of the IT industry in the state, to implement e-governance and to use IT technology extensively in educational institutions. To achieve its objectives, the government has chosen to provide many fiscal incentives to IT companies and give preferential allotment of land for IT industry in NOIDA and other places. The government has recognised IT industry as non-polluting industry and tried to provide government orders, tenders, etc. on its departmental sites. The most notable development has been the permission given for women workers to work late under the Shops and Establishment Act by the Department of Labour.

6. See IT Policy of GoUP (1999).

7. The state government should learn from the debacle of the Cybertron Software Park which was going to be established in Lucknow.

With increasing private participation, there are a few things that the Government of Uttar Pradesh (GoUP) can do to facilitate matters further.

1. Since bandwidth is dependent on right of way, it could develop a friendly policy for wireless access, which would involve coordination with local governments and make government buildings available for wireless sites.
2. On e-governance, GoUP needs to make content available (transparent functioning) and facilitate public access by fostering Teleinfo centres in villages and towns.
3. To attract software investment, the key is a pleasant urban environment that is conducive to young educated people. Furthermore, there is a need to facilitate IT education in order to ensure that citizens of Uttar Pradesh can participate in this high growth sector.

More than a policy activism to increase supply, it is a user oriented action plan of the state government which will help the spread of Internet in the state.[8] Across the world, state-owned commercial enterprises have discovered that the Internet can improve the way they work, save money and put them in closer contact

BOX 9.2

State Wide Area Network in Andhra Pradesh and Gujarat

Andhra Pradesh

The state government is using the State Wide Area Network (SWAN) to promote e-governance and to transform itself into a knowledge society. The vision of the Government of Andhra Pradesh for the all round development of the state is spelt out in a cogent blueprint called Vision 2020. This document sets out the goals and milestones and suggests the strategies and plans necessary to realise the goals.

The government is making conscious efforts to ensure that the benefits of all IT initiatives percolate to the middle and lower income classes, and particularly to those below the poverty line. This vision translates into specific goals like taking Internet to villages, promoting IT-enabled education, promoting local language interface and taking up socially relevant extension and outreach programmes.

The project was conceived in early 1999. AP Technology Services (APTS), a state public sector organisation runs the network. The APSWAN linked the state capital to 23 district headquarters and two major cities in Phase 1. Phase 2 would link the districts to the 1124 *mandal* offices. Last mile connectivity to the villages is proposed to be provided by wireless in local loop.

The APSWAN acts as the basic information highway for IT related applications of the government such as data sharing among different wings of the government, providing dedicated telephone facility to state government departments, e-mail and video-conferencing facility to all and government departments.

Gujarat

The objective of Gujarat SWAN (GSWAN) is to provide better delivery systems to the citizens. The government understands that IT is not an end in itself but the means to provide a better quality of life. It does not aim at merely automating existing process but to use IT to improve overall organisational efficiency and pass the benefits to the citizens.

The GSWAN connects all government offices at the state secretariat at Gandhinagar (called Sachivalaya Campus Area Network (SCAN), district headquarters (called district centres [DC]) and *taluka* headquarters (called *taluka* centres [TC]). The network consists of one SCAN, 25 DCs (one is a super DC at Ahmedabad) and 230 TCs. The GSWAN provides voice, video and data services, using Internet protocol having flexibility to expand and/or upgrade. GSWAN is implemented on two mbps dedicated lines from the SCAN to DC and on 64 kbps lines from DCs to TCs. The government of Gujarat (GoG) uses existing BSNL capacity for the network.

The project was conceived in 1999 and has been implemented on a design, finance, build, own, operate, maintain and transfer basis, spread over eight years. The bidders were required to bid for a fixed quarterly revenue by SCAN, DC, and TC for the eight year period. The BOOT operator provides the equipment at the network nodes and ensures operations as per a specified service level agreement. The GoG would provide all the sites. The BOOT operator could augment revenues through information kiosks, leveraging content from GoG. The first phase of the project was completed in August 2001.

8. The '*e-choupal*' (electronic commerce initiative) is a good example to harness a user-oriented technology to improve commercial gains by a private company. ITC Ltd. launched *e-choupal* in the state in November 2001 for providing information electronically on commodities such as wheat, rice, *bajra*, mustard and some pulses. The venture will cover 100 villages in 13 districts of western UP to procure *basmati* rice. Through this venture the company intends to procure inputs from farmers and export agri-products. ITC will ensure proper storage of commodities apart from facilitating buying and selling of agro-products. Under this initiative farmers would be able to get information on local and international prices, enable speedy transactions and ensure price discovery. Information is also provided in Hindi.

with their 'customers' i.e. their own citizens. E-governance means no more waiting in line. E-government is about using technology and the telecom network to improve the delivery of public services to citizens, business partners and suppliers, and those working in the public sector. (See Box 9.2 for State Wide Area Network in Andhra Pradesh and Gujarat).

The Uttar Pradesh government's policy on e-governance implicitly recognises that the state government should become a prime user of Internet and provider of content to people at their doorsteps. The details are not spelt out, however. As with many commercial businesses, a front-end showcase often masks internal chaos. Information that arrives on a computer screen or a user device is re-entered into old systems for processing by hand on paper. The aim should be to link and integrate front and back office systems. To do this successfully, the state needs to address two separate issues. First, the focus on treating the 'citizens as customer' requires re-engineering all the bureaucratic processes and taking a long-term, state-wide perspective. This is a challenge not of technology, but of political leadership. Second, there is a need for transparency. The question is how to use technology to achieve transparency. Technology should be used to break out of 'silo' thinking where ideas and information are closely held and not shared. The success of e-government rests on providing an integrated, boundary-less, customer-focussed public service.

Telecom in Rural Areas: A proactive policy is needed which encourages investment in infrastructure for rural areas. Some researchers have found that rural pay phones can be profitable in localities with as few as 200 people.[9] In rural areas where isolation and poor infrastructure services are often the norm, telecommunications can play an extremely important role in enhancing rural, social and economic development. Grameen Telecom of Bangladesh has demonstrated that private sector involvement in the rural telecom sector can make a significant contribution to poverty reduction as well. According to a Grameen Bank study, the members mainly used telephone to discuss financial matters (remittances–42%). Even social calls to family and friends (44%) frequently involved transfer of information about market prices and market trends, making the village phone an important tool for taking advantage of market information to increase profits and reduce expenses.

To make the operations viable, STD facility should be provided on all VPTs and these should gradually be converted into multi-service centres where other services like postal, multi-media, land records, etc. are provided. These centres need not be run by the government and could be operated on a franchise basis with Internet telephony. Cost can reduce substantially and a franchisee can run a complete 'communication centre' in a village. Experience of Bangladesh and studies carried out in Gujarat and Western Uttar Pradesh show that traffic increases rapidly depending on how the franchisee uses the VPT to provide value added services. Proper administration of subsidy is an important element in providing a reliable service.[10]

9.5. Conclusion and Recommendations

The Telecom and IT network has been growing rapidly, but compared to other states Uttar Pradesh's network and services have lagged behind in the last five years. With implementation of NTP99, reorganisation of BSNL and entry of Reliance Infocomm as telecom service provider, there is faster propagation of the basic service, the broadband network and other value added services in the state.

The only infrastructure which is witnessing substantial participation from the private sector will ensure that the state is not 'under' provided for in the coming years as a result of competition among different providers. The future of Telecom and IT in the state looks bright.

9.5.1. Recommendations

9.5.1.1. Implement IT-friendly Policies

Policy interventions are required for changes in labour laws, providing right of way and making provision for wires for present and future expansion. For example, in Greater NOIDA pipes are already being laid for such expansion while roads are under

9. Rogati and Dymond (1997). "Option for Rural Telecommunication Development", *WB Technical Paper 359*, Washington, DC.

10. Realising the importance of IT in overall development of the state, the UP Development Council constituted a sub-committee of businessmen in 2004, to advise the government on improving the IT policy. It is heartening to note that many of the issues raised in this section are being addressed by the sub-committee.

construction. Similarly, in other towns and cities where roads are being built, such provisions need to be made.

With increasing private participation, there are a few things that the state government can do to facilitate matters:

- Since bandwidth is dependent on right of way, it could develop a friendly policy for wireless access, which would involve coordination with local governments and make government buildings available for wireless sites.
- On e-governance, GoUP needs to make content available (transparent functioning) and facilitate public access by fostering Teleinfo Centres in villages and towns.
- To attract software investment, the key is a pleasant urban environment that attracts young educated people. Furthermore, there is a need to facilitate IT education in order to ensure that citizens can participate in this high growth sector.

9.5.1.2. Avoid Chaos in Implementation of e-governance

The Uttar Pradesh government's policy on e-governance implicitly recognises that the state government should become a prime user of Internet and provider of content to people at their doorsteps. As with many commercial businesses, a front-end showcase often masks internal chaos. The aim should be to link and integrate front and back office systems. To do this successfully, the state needs to address two separate issues. First, the focus on treating the 'citizens as customer' requires re-engineering all the bureaucratic processes and taking a long-term, state-wide perspective. This is a challenge not of technology, but of political leadership. Second, there is a need for transparency.

9.5.1.3. Make IT a People's Movement

More than policy activism to increase supply, it is a user oriented action plan of the state government which will help the spread of Internet in the State. The 'e-choupal' (electronic commerce initiative), launched by ITC, is a good example of an attempt to harness a user oriented technology to improve commercial gains by a private company. Under this initiative farmers would be able to get information on local and international prices, enable speedy transactions and ensure price discovery.

A proactive policy is needed that encourages investment in infrastructure for rural areas. Some researchers have found that rural pay phones can be profitable in localities with as few as 200 people.[11] To make operations viable an STD facility should be provided on all VPTs. These 'communication centres' need not be run by the government and could be operated on a franchise basis with Internet telephony. Proper administration of subsidies is an important element in providing a reliable service.

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