

Action Plan

E-Readiness Assessments for States/UTs in India were conducted by NCAER for 2003 and 2004. Encouraged by the overwhelming response and positive feedback received on these e-Readiness Assessments, the Department of Information Technology, Government of India initiated e-Readiness Assessment 2005 as well. The States have used these reports to carve out their respective road maps for improving their network readiness as well as increasing the penetration of ICT for economic development. In fact, the States are engaged in policy competition for improving their e-Readiness.

6.1 Unique Features of the e-Readiness Report, 2005

For the first time, Output and Employment Multipliers of the key States of India for the Software, Hardware and ICT Composite segments have been calculated to assess the catalytic effect of ICT on their economic development. The second unique feature of this report is the comparative analysis of the e-Readiness status of Indian States over a three-year period (2003 to 2005). This helps us not only to evaluate but also to monitor State performance. These rankings help us understand whether the States have adopted strategies and action plans to improve their Network Readiness Index. The report also brings out the key factors that States should address to tune up their e-Readiness rankings.

6.2 Indicators of Significance for the States: An Aggregate Analysis

Based on the quantitative analysis, indicators that emerge as important and should be given priority by the States while addressing e-Readiness issues are:

Political and Regulatory Environment

- Proportion of policies taken up for e-Governance.
- Existence of cyber laws in the State.

Infrastructure Environment

- Access to social and educational infrastructure. Factors that are important here include: average distance to the nearest primary school, post office, public telephone booth, computer training centre, college, Internet kiosk, medical store, etc. All these variables turn out to be crucial which is in consensus with our other research finding that old and new technologies are complementary in nature.

Individual Readiness

- Household penetration of computers, telephones and mobiles is a very important variable of Individual Readiness. Training of users in Government-owned computer kiosks has been a significant factor in the North-Eastern region.

Business Readiness

- Setting up of IT parks and increasing the number of IT companies: This proves that competition matters. However, in the case of ISPs and cellulars, limited competition is only possible due to technological constraints such as minimum number of subscribers to be viable per operator, etc. (natural market concentration rider for stable long term operators)
- Incentive regimes for IT companies.
- Dedicated infrastructure for IT companies.

Government Readiness

- Expenditure on education since education of users is an important ingredient.
- Use of ICT in Government functioning is critical, for example, use of ICT in public delivery systems enhances government usage significantly.
- Number of Government officials undertaking/had undertaken online training programmes.



- States that take initiative in opening up of technical colleges gain a competitive advantage over others in the ICT segment.

Government Usage

- Number of e-Governance projects undertaken by the State Government as a regulator and provider of infrastructure plays an enabling role. Government, as probably the largest single user, can help expand the market.

6.3 State-wise Strategies

This section attempts to draw out State-level strategies based on data received from the questionnaires sent to them. This is more of a guide and fine-tuning of policies may be attempted by the States for which DIT and NCAER would be willing to give necessary clarifications and suggestions.

6.3.1 Andhra Pradesh

Andhra Pradesh has emerged as the leader in the e-Readiness ranking of States during 2005 due to its outstanding performance in the Readiness Index.

Sub Index	Rank (Level 1,2,3... 6)	Absolute Score
Readiness	L1	6.73
Environment	L2	2.39
Usage	L2	1.27

Key Indicators to be tackled to retain the leadership

Environment

The State needs to improve the market as well as infrastructure environments. The variables that emerge as important are:

- *Market-* Competition in the Telecom Sector- BSNL's dominant share and absence of other key private players is not facilitating unlike other States where market shares are more evenly distributed
- *Infrastructure inadequacy-* Low density of
 - Primary Schools
 - Computer Training Centers

- Colleges
- Internet Kiosks

is affecting the infrastructure environment of the State adversely.

Usage

In the Usage Index, Andhra Pradesh would need to address the area of individual usage.

Policy changes

- Impetus needs to be given to building physical infrastructure for facilitating individual education including ICT specific education as has been done in Chandigarh, Kerala and Karnataka.
- Chandigarh, Karnataka and Kerala have been able to accommodate major private players in the telecom space that is providing benefits to customers.

Action Plan

- The Government should aim at increasing the density of Internet kiosks as has been done by Tamil Nadu and Karnataka. Internet kiosks should be set up in schools, markets, etc. which would provide Internet facilities and training. The State may also associate with leading institutes for providing online training in computer courses as has been done in Kerala and the North-Eastern States.

6.3.2 Tamil Nadu

Tamil Nadu has remained a Leader State in e-Readiness in the last three years (2003- 05). The State has performed well in all the three Sub-Indices of Readiness

Sub-Index	Rank	Absolute Score
Environment	L1	4.09
Readiness	L1	3.83
Usage	L1	2.00

Key Indicators to be tackled

If the State has not been able to retain the Number 1 position in spite of being in Level 1 in all three Sub-Indices, it is because of the huge difference in the Readiness Sub-Index for Andhra Pradesh (6.79) and Tamil Nadu (3.83)



Readiness

Tamil Nadu emerges as a leader (Level 1) along with Andhra Pradesh, Tamil Nadu, Maharashtra, Karnataka, Kerala and Punjab. The State has performed well in Business and Government Readiness but its performance has been average in Individual Readiness. The areas that need to be addressed are:

- *Individual*- Open Internet Kiosks/ Centres State-wide as an important State-level programme to improve Individual Readiness e.g.
 - Akshaya- Kerala
 - North Eastern region- Sikkim CIC programme
- *Individual*- Encourage individuals to avail broadband connectivity/ computers and telephone ownership.

Environment

Although the State has performed well in the Political and Regulatory Environments, it needs to improve its performance in the Market and Infrastructure Environment indicators. In this category the variables that need to be addressed are:

- *Infrastructure inadequacy*- Low density of primary schools is affecting the infrastructure environment of the State
- *Market*- Competition in the telecom sector- BSNL's dominant share is affecting the environment as well as the usage of telecom services.

Usage

Although Tamil Nadu has emerged as a leader in the Usage Sub-Index of the e-Readiness ranking, its performance in the Leaders category has not been spectacular. It ranks the lowest amongst the Level 1 States of Delhi, Chandigarh, Kerala and Karnataka. Improvements in the following variables would enable the State to achieve a better usage score:

- *Individual* - Incentives for individuals to seek and adapt broadband connectivity
- *Business* - proportion of companies using ISDN connection and VSAT connection.

Policy changes

- Impetus needs to be given to facilitate setting up more schools for penetration and enrolment in

primary education centers, as has been done in Chandigarh, Kerala and Karnataka.

- Government should provide fiscal incentives for computer manufacturing and its distribution to increase Individual Readiness in the State and to set up computer kiosks for access.
- Government-owned computer kiosks across the State with PPP model for improved Individual Readiness and Usage.
- Government to attract major private players in their telecom space to increase competition which will benefit customers.

Action Plan

- Set up more primary schools with the help of private players as has been done in Karnataka, Chandigarh and Delhi.
- The State Government to initiate discussions with private players to provide ICT infrastructure as has been done by Andhra Pradesh, Delhi, Goa, Punjab, Kerala, Maharashtra and Gujarat.
- The State Government can initiate discussions with financial institutions to provide loans at low interest rates to citizens to purchase computers. Taxes may be also reduced on ICT hardware to bring down the cost of computers in the State.
- The State can set up Internet kiosks throughout its territory as a follow-up policy measure. The Tamil Nadu Government should emulate Sikkim/ Akshaya-type programme, either with Government funds or PPP to open up as many Internet kiosks as possible.

6.3.3 Karnataka

Although Karnataka has remained a leader in e-Readiness over the past three years, the current year has seen other States which have improved their rankings within the Level 1 group.

Sub-Index	Rank	Absolute Score
Environment	L2	2.26
Usage	L1	2.73
Readiness	L1	3.56



Key Indicators to be tackled

Environment

Although, the State has performed well in the Usage and Readiness categories, its performance in the Environment Sub-Index needs improvement. In this category the variables that need to be addressed are:

- *Political and Regulatory-* Institutionalisation of monitoring and formulating e-Governance projects.

Policy changes

- Karnataka is the only State to have a Secretary-level official heading the e-Governance wing. It only needs to institutionalise the set up.

Action Plan

- A State e-Governance Mission Team (SeMT) needs to set up if not in place already.
- The Government also needs to evolve a transparent policy for PPP in e-Governance activities to initiate investments from the private sector in the ICT sector if not already done.

6.3.4 Kerala

The State has shown a marked improvement over the past three years and has emerged in the Leader Category in the current year.

Sub-Index	Rank	Absolute Score
Environment	L2	2.48
Usage	L1	2.91
Readiness	L1	3.03

Key Indicators to be tackled

Environment

The State's performance in the Environment Sub-Index has been average. Although the State has performed well in the market environment, it needs improvement in the political and regulatory environment. The issues that need to be addressed are:

- *Political and Regulatory-* proportion of policies taken up for e-Governance.

Readiness

The State is one of the key performers as far as the Readiness Sub-Index is concerned. It shares space with Andhra Pradesh, Karnataka and Tamil Nadu. However, improvements are required in the Business category. The variables that need to be taken care of are:

- *Business-*
 - Proportion of ICT exports to total exports from the State
 - Employment per IT Park in the State.

Usage

The State's performance in the Usage Category has been outstanding, second to only the two Union Territories of Delhi and Chandigarh. But Kerala needs to marginally improve its performance in the Individual and Business Categories to maintain its ranking. The variables that need to be addressed are:

- *Individual-* incentives for individuals to seek and adapt broadband connectivity
- *Business-* proportion of companies using
 - ISDN connection
 - VSAT connection

Policy changes

- Proactive political and regulatory environment seems to be the need of the hour
- Introduce a policy to facilitate ICT exports from the State and develop more IT parks as has been done by Karnataka, Maharashtra and Andhra Pradesh.

Action Plan

- The ICT policy of Kerala was last updated in 2001. The State Government needs to follow the footsteps of Gujarat, Haryana, Madhya Pradesh, Punjab and Chandigarh and revise its ICT policy frequently.
- The State Government also needs to give concessions to industries/companies for ICT activities similar to Haryana, Maharashtra, Chandigarh and Delhi.
- If there are no cyber laws that confer legal status to electronic transactions and documents in the State, they need to be put in place immediately.
- Provide incentives like tax concessions etc. to attract investment for the private sector to build IT parks as



has been done in Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka etc.

6.3.5 Chandigarh

Chandigarh's ranking has improved in the past three years and the State has graduated from the Aspiring Leader category in 2003 to a Leader in 2004 and 2005.

Sub-Index	Rank	Absolute Score
Environment	L1	4.55
Usage	L1	3.46
Readiness	L2	0.22

Key Indicators to be tackled

Environment

The State's performance in the Environment Sub-Index has been outstanding. Within this category the Government needs to address only the Political and Regulatory Environments to retain its position of a leader.

Readiness

The performance of the State in the Readiness Index has been only average, with the following areas needing improvement:

- *Individual*- Total number of:
 - Engineering / total technical students
 - MCA / total technical students
 - B.Sc. (Computer Science) / total technical students.
- *Government*- Government Expenditure on Secondary Education
 - Number of Ministries using ICT in governance process/ functioning.

Usage

Similar to the Environment Sub-Index, the performance of the State in the Usage Sub-Index has also been exceptionally good. To retain its position the Government needs to address the following:

- *Business*- proportion of companies using:
 - ISDN connection
 - VSAT connection

- *Government*- Proportion of policies taken up for ICT usage
 - Number of e-Governance projects undertaken.

Policy changes

- Provide impetus to higher education- especially in computer and engineering branches.
- Address the issues of IPR in the ICT policy as has been done by Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Rajasthan, Delhi, etc.
- Introduce ICT usage in governance and functioning of Ministries similar to Delhi, Karnataka, Rajasthan, Andhra Pradesh and Maharashtra.
- Like Kerala, Andhra Pradesh, Maharashtra, and Tamil Nadu there is an increase in the number of e-Governance projects and their scope.
- Effectively monitor the existing e-Governance applications.

Action Plan

- Give financial support to colleges and give them incentives to increase the number of seats available in technical courses as has been done in Andhra Pradesh, Tamil Nadu, Kerala and Karnataka.
- Give financial support to private entrepreneurs for development of institutes of higher education similar to Delhi, Punjab, Kerala and Maharashtra.
- The State Government to initiate discussions with private players to provide ICT infrastructure in the State as has been done by Haryana, Tamil Nadu, Punjab, Kerala, Maharashtra and Gujarat.
- Coordinate with:
 - Karnataka for applications on land records
 - Maharashtra for application on property records, transportation, etc.
 - Andhra Pradesh for birth and death registration, trade, etc.
 - Madhya Pradesh for application of ICT in agriculture.

6.3.6 Maharashtra

The e-Readiness ranking of Maharashtra has witnessed a downward trend. The State has scored the lowest in the Leaders Group. To retain the position of leader the State needs to address the various issues related to Environment, Readiness and Usage of ICT.



Sub-Index	Rank	Absolute Score
Environment	L1	4.30
Readiness	L1	2.59
Usage	L2	1.01

Key Indicators to be tackled

Environment

The State has performed well in the Environment Sub-Index, second only to the Union Territory of Chandigarh. To retain its position, the State needs to continue the positive efforts made by it in the ICT sector. It is only the Market Environment which needs to be addressed.

- *Market-* Number of players in the cellular sector- only 4 major players in the State compared to seven in Chandigarh.

Readiness

The State is one of the key performers in the Readiness Sub-Index of the e-Readiness ranking along with Andhra Pradesh, Karnataka and Tamil Nadu. However, improvements are required in the Individual and Government Categories. The variables that need to be taken care of are:

- *Individual-* Total number of:
 - Engineering / total technical students
 - MCA / total technical students
 - B.Sc. (Computer Science) / total technical students.
- *Government-* Number of Ministries using ICT in governance process/ functioning.
 - Proportion of policies taken up for ICT Readiness.

Usage

The performance of the State in the Usage Sub-Index has been average. To move up a ladder in the Usage Category, the State Government needs to take care of the following issues of the Individual Category:

- *Individual-* Incentives for individuals to seek and adapt broadband connectivity.

Policy changes

- Chandigarh, Gujarat and Karnataka have been able to accommodate major private players in the telecom space that is providing benefits to the consumers.
- Provide impetus to higher education- special budget allocation for Computer and Engineering branches.
- Introduce ICT usage in governance and functioning of Ministries as in Delhi, Karnataka, Rajasthan, Andhra Pradesh and Maharashtra.

Action Plan

- Give financial support to colleges and give them incentives to increase the number of seats available in technical courses as has been done in Andhra Pradesh, Tamil Nadu, Kerala and Karnataka.
- Provide financial support to private entrepreneurs for development of institutes of higher education similar to Punjab, Kerala and Maharashtra.
- The State Government to initiate discussions with private players to provide ICT infrastructure in the State as has been done by Haryana, Tamil Nadu, Kerala and Gujarat.

6.3.7 Punjab

Punjab has emerged as the leader among the northern States in terms of overall performance in the last two years. This is an indication of the performance of the State in all spheres.

Sub-Index	Rank	Absolute Score
Environment	L1	3.62
Readiness	L1	2.75
Usage	L2	1.38

Key Indicators to be tackled

Environment

The State has performed well in the Environment Sub-Index and is among the Leader States like Chandigarh, Maharashtra and Tamil Nadu. The variables that need the attention of the State Government are:

- *Market-* Number of players in the
 - Telephone- only four major players in the State compared to twelve in Maharashtra



- Cellular Phones- only four major players in the State compared to seven in Chandigarh.
- *Infrastructure inadequacy*- Low density of
 - Post Office
 - Computer Training Centers.

Readiness

In the Readiness Sub-Index also, the State's performance has been admirable. Only the four southern States of Andhra Pradesh, Tamil Nadu, Karnataka and Kerala have performed better than Punjab in this category. The variables in which the State needs to improve marginally are:

- *Business*- Employment- Proportion of ICT Exports to total exports from the State
- *Government*- Number of Ministries using ICT in governance process/ functioning.

Usage

The performance of Punjab in Usage Sub-Index has been average. This is the area that the State Government needs to lay emphasis on. The variables that need to be tackled are:

- *Individual*- Incentives for individuals to seek and adapt broadband connectivity
- *Business*- Share of companies using ISDN.

Policy changes

- Government to attract major private players in their telecom space to increase competition which can benefit customers.
- Impetus needs to be given to physical infrastructure for facilitating penetration and enrolment in ICT education as has been given in Chandigarh, Kerala and Karnataka.
- Introduce a policy to facilitate ICT exports from the State.
- Introduce ICT usage in governance and functioning of Ministries similar to Delhi, Karnataka, Rajasthan, Andhra Pradesh and Maharashtra.
- Specific outlay in Budget for ICT awareness.

Action Plan

- The State Government to initiate discussions with private players to provide ICT infrastructure in the

State as has been done by Haryana, Tamil Nadu, Punjab, Kerala and Gujarat.

- The Government should aim at increasing the density of Internet kiosks/ Computer Training Centers as has been done by Kerala and the North-Eastern States. Internet kiosks should be set up in schools, markets, etc., which would provide Internet facilities as well as training. It may also associate with leading institutes for providing online training in computer courses as has been done in North-Eastern States.
- The State Government also needs to give concessions to industries/companies for ICT activities similar to Haryana, Maharashtra, Chandigarh and Delhi.
- The State is to set up Internet kiosks throughout its territory as a follow up to policy measures

6.3.8 Delhi

The performance of the capital has been more or less consistent, which could be attributed to the continued efforts made by the State in the ICT sector. However, to improve its ranking drastically, the State Government needs to take more proactive steps in all spheres of e-Readiness, especially Readiness and Environment.

Sub-Index	Rank	Absolute Score
Usage	L1	4.93
Environment	L2	2.62
Readiness	L3	-0.33

Key Indicators to be tackled

Environment

The State has performed well in the Market and Infrastructure Sub-Indices, but needs overall improvement in the Political and Regulatory Environments.

- *Political and Regulatory*- Proportion of policies taken for
 - e-Governance
 - ICT companies
 - Security
 - Readiness.

The state needs to take positive steps to improve the readiness of the State. The variables that emerge as important are:

- *Individual-* Total number of:
 - Engineering / total technical students
 - B.Sc. (Computer Science) / total technical students
 - Business- Employment in IT companies/ total number of IT parks
 - Government- Percentage of top officials with online training programme
 - Proportion of policies taken up for ICT Readiness.

Usage

Delhi's performance in the Usage Sub-Index has been outstanding. It is only the Government Usage that needs to be addressed. The variable that needs the attention of the policy makers is the proportion of policies taken up for ICT usage.

Policy changes

- Proactive political and regulatory environment - need of the hour.
- Provide impetus to higher education – specially computer and engineering courses as has been done by Andhra Pradesh, Tamil Nadu, Karnataka, etc.
- Introduce a policy for development of IT parks as has been done by Karnataka, Maharashtra and Andhra Pradesh.
- Provide training to officers online as has been done in leader States and the North-Eastern region.
- Introduce e-Governance applications.

Action Plan

- ICT policy has to be revised frequently as has been done by Gujarat, Haryana, Madhya Pradesh, Punjab and Chandigarh.
- Have a supplementary budget for State-level e-Governance projects similar to Andhra Pradesh, Goa, Gujarat, Haryana, Karnataka, Kerala, Maharashtra and the North-Eastern States.
- The Government also needs to evolve a transparent policy for PPP in e-Governance activities to initiate investments from the private sector into the ICT sector if not already done.

- Add a section on Regulatory and Legal Policy in the ICT policy if not already in place.
- The State Government also needs to provided subsidised utilities to ICT firms similar to Andhra Pradesh, Gujarat, Haryana, Kerala, Maharashtra, Punjab, Tamil Nadu, Chandigarh and Rajasthan to attract private players into the ICT sector.
- Give financial support to colleges and give them incentives to increase the number of seats available in technical courses as has been done in Andhra Pradesh, Tamil Nadu, Kerala and Karnataka.
- Provide financial support to private entrepreneurs for development of institutes of higher education similar to Punjab, Kerala and Maharashtra.
- Provide incentives like tax concessions etc. to attract investment for the private sector to build IT parks as has been done in Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka, etc.
- The State Government to initiate discussions with private players to provide ICT infrastructure in the State as has been done by Haryana, Tamil Nadu, Punjab, Kerala, Maharashtra and Gujarat.
- Coordinate with:
 - Karnataka for applications on land records
 - Maharashtra for application on property records, transportation, etc.
 - Andhra Pradesh for birth and death registration, trade, etc.
 - Madhya Pradesh for application of ICT in agriculture.

6.3.9 Haryana

Haryana has shown constant improvement over the last three years and has upgraded from the 'Expectants' Group to the 'Aspiring Leaders' group. Haryana has been the IT destination in the North, with a number of incentives to business and people.

Sub Index	Rank	Absolute Score
Usage	L1	2.14
Environment	L2	2.96
Readiness	L2	0.64



Key Indicators to be tackled

Readiness

The performance of the State in the Readiness Sub-Index has been average. To improve its ranking the Government needs to lay emphasis on:

- *Government-* Government Expenditure on Secondary Education
 - Number of Ministries using ICT in Governance process/ functioning.

Usage

In the Usage Category, it is the individual usage that needs to be addressed. Incentives need to be given to individuals to seek and adapt broadband connectivity.

Policy Changes

- Provide impetus to higher education- specific budget allocation for secondary education.
- Introduce ICT Usage in governance and functioning of Ministries similar to Delhi, Karnataka, Rajasthan, Andhra Pradesh and Maharashtra.

Action Plan

- Increase outlay in the annual budget for secondary education.
- Fine tuning for ICT education by giving financial support to colleges and providing them incentives to increase the number of seats available in the technical courses as has been done in Kerala, Andhra Pradesh, Tamil Nadu and Rajasthan.

6.3.10 Goa

There has been a steady decline in the performance of Goa. However, it still retains its position of an aspiring leader due to its commendable performance in the Environment Sub-Index.

Sub Index	Rank	Absolute Score
Usage	L2	0.87
Environment	L1	3.33
Readiness	L4	-0.85

Key Indicators to be tackled

Environment

The State's performance in the Environment Sub-Index has been admirable and it needs to continue with the positive measures taken to create a conducive environment for ICT. The variables in which improvements are required are:

- *Market-* Number of players in the telecom sector and market share of each player- presence of only 2 major players and BSNL's dominant share is not facilitating the environment unlike other States where the markets are more evenly distributed
- *Political and Regulatory Environment-* proportion of policies taken up for ICT.

Readiness

The performance of the State in the Readiness Category has been poor. Though it has done well in the Individual Readiness Category, improvements are needed in the following variables of the Business and Government categories:

- *Business-* Employment in IT companies/ total number of IT parks
 - ICT Exports to total exports.
- *Government-* Proportion of policies taken for ICT readiness
 - Number of Ministries using ICT in governance process/ functioning
 - Percentage of top officials with online training programmes.

Usage

In the Usage Sub-Index the performance of the State has been average with improvements required in all the three categories. The variables that need to be addressed are:

- *Individual-* Incentives need to be given to individuals to seek and adapt broadband connectivity
- *Business-* Share of companies using
 - ISDN
 - VSAT
- *Government-* Accessibility of information and services by the citizens
 - Proportion of policies taken up for ICT usage.



Policy Changes

- Develop a policy environment for introduction of ICT applications in the State.
- Introduce a policy to facilitate ICT exports from the State.
- Address the issues of IPR in the ICT policy if not already done.
- Outlay in budget for ICT awareness.
- Introduce ICT usage in governance and functioning of Ministries similar to Delhi, Karnataka, Rajasthan, Andhra Pradesh and Maharashtra.
- Introduce a policy for development of IT parks as has been done by Karnataka, Maharashtra and Andhra Pradesh.
- Attract major private players into their telecom space to increase competition to benefit customers.

Action Plan

- The State Government also needs to give concessions to industries/companies for ICT activities similar to Haryana, Maharashtra, Chandigarh and Delhi.
- Provide incentives like tax concessions etc. to attract investment for the private sector to build IT parks as has been done in Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka, etc.
- The State Government to initiate discussions with private players to provide ICT infrastructure in the State as has been done by Haryana, Tamil Nadu, Punjab, Kerala, Maharashtra and Gujarat.
- Set up Internet kiosks throughout the State to facilitate accessibility of information and services to the citizens. Also coordinate with:
 - Karnataka for applications on land records
 - Maharashtra for application on property records, transportation, etc.
 - Andhra Pradesh for birth and death registration, trade, etc.
 - Madhya Pradesh for application of ICT in agriculture.

6.3.11 Gujarat

A downward trend is observed in the performance of Gujarat in e-Readiness. Although the performance of the State has been average on Usage and Environment, its ranking in the Readiness Sub-Index has been poor

and some concrete steps need to be taken by the Government to improve its ranking.

Sub Index	Rank (Level 1,2,3...6)	Absolute Score
Usage	L2	1.81
Environment	L2	1.68
Readiness	L4	-0.86

Key Indicators to be tackled

Environment

In the Environment Sub-Index, it is the market which the State needs to address. Also it has to continued with the positive measures taken so far to improve its performance and graduate to Level 1. The key variable to be tackled is:

- *Market-* Competition in Telecom sector- BSNL's dominant share and absence of other key private players is not facilitating unlike other States where the market shares are more evenly distributed.

Readiness

The State's performance in the Readiness Sub-Index has been unsatisfactory and it appears in Level 4 of this Category. The State Government needs to address both the Individual and Government Readiness to improve its ranking.

- *Individual-* Total number of B.Sc. (Computer Science) / total technical students
 - Percentage of total households with computers.
- *Government-* Percentage of top officials with online training programmes
 - Government Expenditure on Secondary Education
 - Number of Ministries using ICT in governance process/ functioning.

Usage

It is only the Business Usage in which the State needs to improve its performance. The variables that emerge important are:

- *Business-* Share of companies using
 - ISDN
 - VSAT



Policy Changes

- Fiscal incentives for computer manufacturing and distribution.
- Special budget allocations for secondary education and incentives for higher education especially engineering and computer-related courses.
- Outlay in budget for ICT Awareness.
- Policy for setting up Government kiosks to spread awareness.
- Develop a policy environment for introduction of ICT Applications.
- Introduce ICT Usage in governance and functioning of Ministries similar to Delhi, Karnataka, Rajasthan, Andhra Pradesh and Maharashtra.
- Chandigarh, Karnataka and Kerala have been able to accommodate major private players in the telecom space that is providing benefits to the customers.

Action Plan

- The State Government can initiate discussions with financial institutions/ banks to provide loans at low interest rates to citizens for purchase of computers. Taxes may be also be reduced on ICT hardware to bring down the cost of computers
- Give financial support to colleges and give them incentives to increase the number of seats available in technical courses as has been done in Andhra Pradesh, Tamil Nadu, Kerala and Karnataka.
- Provide financial support to private entrepreneurs for development of institutes of higher education similar to Punjab, Kerala and Maharashtra.
- Give concessions to industries/companies for ICT activities similar to Haryana, Maharashtra, Chandigarh and Delhi.
- Aim at increasing the density of Internet kiosks as has been done by Tamil Nadu and Karnataka. Internet kiosks should be set up in schools, markets, etc. to provide Internet facilities as well as training. It can also associate with leading institutes for providing online training in computer courses as has been done in Kerala and the North-Eastern States.

6.3.12 Uttar Pradesh

Uttar Pradesh is the key performer of the Expectants Group in the e-Readiness index for 2005. The State has

shown considerable improvement since last year.

Sub Index	Rank (Level 1,2,3...6)	Absolute Score
Usage	L3	-0.83
Environment	L2	0.58
Readiness	L2	1.38

Key Indicators to be tackled

Environment

The performance in the Environment Sub-Index is average and it needs to improve in the market, Political and Regulatory as well as Infrastructure Category. The variables that emerge important are:

- *Market-* Competition in telecom sector- BSNL's dominant share and absence of other key private players is not facilitating, unlike other States where market shares are more evenly distributed
- *Political and Regulatory Environment-* Proportion of policies taken up for ICT companies
- *Infrastructure-* Distance from the nearest:
 - Computer Training Center
 - Internet Kiosk.

Readiness

In the Readiness Category also, the State appears in Level 2. It needs to improve its performance in Individual, Business as well as Government Readiness to graduate to Level 1. The variables that need to be addressed are:

- *Individual-* Total number of engineering students/ total technical students
 - Open Internet Kiosks/ Centres State-wide as an important State-level programme to improve Individual Readiness e.g.
 - Akshaya- Kerala
 - North-Eastern region- Sikkim CIC program
 - Encourage individuals to avail broadband connectivity/ computers and telephone ownership
- *Business-* ICT Exports to total exports
- *Government-* number of top officials with online training program
 - Percentage of Government expenditure on secondary education



Usage

The performance of the State has been satisfactory in the Usage Sub-Index and it needs to improve in all spheres. However the variables in which drastic measures are needed are:

- *Individual-* Incentives need to be given to individuals to seek and adapt broadband connectivity
- *Government-* Accessibility of information by the citizen.

Policy Changes

- Specific policy for introduction of Computer Information Centers (CICs).
- Special budget allocations for secondary education and incentives for higher education, especially engineering courses.
- Outlay in budget for ICT Awareness.
- Policy for setting up Government kiosks for access to spread awareness.
- Chandigarh, Karnataka and Kerala have been able to accommodate major private players in the telecom space that is providing benefits to the customers.
- Introduce a policy to facilitate ICT exports from the State.

Action Plan

- The ICT Policy was last updated in 2004. The state government needs to follow the footsteps of Gujarat, Haryana, Madhya Pradesh, Punjab and Chandigarh and revise its ICT Policy.
- The Government should aim at increasing the density of Internet kiosks as has been done by Tamil Nadu and Karnataka. Internet kiosks should be set up in schools, markets, etc. which would provide Internet facilities as well as training. It can also associate with leading institutes for providing on- line training in computer courses as has been done in Kerala and North-Eastern States.
- Give financial support to colleges and give them incentives to increase the number of seats available in technical courses as has been done in Andhra Pradesh, Tamil Nadu, Kerala and Karnataka.

- Provide financial support to private entrepreneurs for development of institutes of higher education similar to Punjab, Kerala and Maharashtra.
- The State Government also needs to give concessions to industries/companies for ICT activities similar to Haryana, Maharashtra, Chandigarh and Delhi.
- The State Government can initiate discussions with financial institutions/ banks to provide loans at low interest rates to citizens for purchase of computers. Taxes may be also be reduced on ICT hardware to bring down the cost of computers in the State.

6.3.13 Pondicherry

The e-Readiness ranking of Pondicherry has remained unchanged over the last two years. Besides Environment, the State's performance in the other two Sub-Indices has been unsatisfactory.

Sub Index	Rank (Level 1,2,3...6)	Absolute Score
Usage	L4	-1.42
Environment	L2	1.29
Readiness	L4	-1.94

Key Indicators to be tackled

Environment

The State's performance has been average in the Environment Sub-Index and the State needs to improve in all the three categories- Market, Political and Regulatory and Infrastructure. The variables that need to be addressed are:

- *Market-* Competition in cellular sector- BSNL's dominant share is not facilitating unlike other States where market shares are more evenly distributed
- *Political and Regulatory Environment-* Proportion of policies taken for e-Governance
 - Proportion of policies taken for ICT companies
 - Proportion of Security Policies.
- *Infrastructure-* Distance from the nearest:
 - Computer Training Centre
 - Internet Kiosk.



Readiness

In all the three categories of the Readiness Sub-Index, the performance has not been satisfactory and the variables that emerge important are:

- *Individual*- Total number of engineering students/ total technical students encourage increasing number of households to own computers
- *Business*- Employment in IT companies/ total number of IT parks
- *Government*- Proportion of policies taken for ICT readiness
 - Number of Ministries using ICT in governance process/ functioning.
 - Percentage of top officials with online training programmes.

Usage

In usage also the State has performed poorly and improvements are desirable in all the three categories — Individual, Business and Government. The variables that need to be tackled are:

- *Individual*- Incentives need to be given to individuals to seek and adapt broadband connectivity
- *Business*- Share of companies using
 - ISDN
 - VSAT
- *Government*- Status of accessibility of information and services by the citizens
 - Proportion of policies taken up for ICT usage
 - Number of e-Governance projects undertaken.

Policy Changes

- The ICT Policy of the Pondicherry was last updated in 1999. The State Government needs to follow the footsteps of Gujarat, Haryana, Madhya Pradesh, Punjab and Chandigarh and revise its ICT policy frequently.
- Address the issues of IPR in the ICT policy as has been done by Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Rajasthan, Delhi, etc.
- An effective legal machinery to prevent piracy of ICT products to be put in place.

- Government-owned computer kiosks across the State with PPP (Public- Private Partnership) model for improved individual readiness and usage.
- Provide impetus to higher education, especially in engineering.
- Chandigarh, Karnataka and Kerala have been able to accommodate major private players in the telecom space that is providing benefits to the customers.
- Introduce ICT usage in governance and functioning of Ministries similar to Delhi, Karnataka, Rajasthan, Andhra Pradesh and Maharashtra.
- Emulate Kerala, Andhra Pradesh, Maharashtra, and Tamil Nadu in increasing the number and scope of e-Governance projects.
- Provide online training to officers in government organisations as has been done in leader States and the North-Eastern region.
- Effectively monitor the existing e-Governance applications.
- Introduce a policy for development of IT parks as has been done by Karnataka, Maharashtra and Andhra Pradesh.

Action Plan

- The ICT Policy of the State does not have a section on Regulatory, Legal and Security Policy —the State Government needs to add these sections while reviewing the policy.
- Have a Supplementary Budget for State-level e-Governance projects similar to Andhra Pradesh, Goa, Gujarat, Haryana, Karnataka, Kerala, Maharashtra and the North-Eastern States.
- The Government also needs to evolve a transparent policy for PPP in e-Governance activities to initiate investments from the private sector into ICT if not already done.
- The State can set up internet kiosks as a follow-up on policy measures. The Tamil Nadu Government should emulate the Sikkim and Akshaya programmes, either with Government funds or PPP to open up as many internet kiosks as possible in the State.
- Give financial support to colleges and give them incentives to increase the number of seats available



in technical courses as has been done in Andhra Pradesh, Tamil Nadu, Kerala and Karnataka.

- Give financial support to private entrepreneurs for development of institutes of higher education similar to Delhi, Punjab, Kerala and Maharashtra.
- The State Government to initiate discussions with private players to provide ICT infrastructure in the State as has been done by Haryana, Tamil Nadu, Punjab, Kerala, Maharashtra and Gujarat.
- Provide incentives like tax concessions to attract investment for the private sector to build IT parks as has been done in Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka, etc.
- Coordinate with:
 - Karnataka for applications on land records
 - Maharashtra for application on property records, transportation, etc.
 - Andhra Pradesh for birth and death registration, trade, etc.
 - Madhya Pradesh for application of ICT in agriculture.

6.3.14 Rajasthan

Rajasthan has shown tremendous improvement over last year's e-Readiness ranking and has graduated from the Average Achiever's Category to the Expectants Category.

Sub Index	Rank (Level 1,2,3...6)	Absolute Score
Usage	L2	0.18
Environment	L3	-0.61
Readiness	L3	-0.05

Key Indicators to be tackled

Environment

In the Environment Sub-Index the State has done well in the Market Category, but needs improvement in the Political and Regulatory and Infrastructure Environment. The variables that are to be tackled are:

- *Political and Regulatory*- Proportion of policies taken for ICT companies

- *Infrastructure*- Distance from the nearest:
 - Computer training Centre
 - College
 - Internet Kiosk
 - Medical Store

Readiness

Individual and Government Readiness needs to be addressed in the Readiness Sub-Index. The variables that emerge important are:

- *Individual* - Open Internet kiosks/Centres as an important State-level programme to improve Individual Readiness e.g.
 - Akshaya- Kerala
 - North-Eastern region- Sikkim CIC programme
 - Encourage individuals to avail broadband connectivity/computers and telephone ownership
- *Government*- Number of Ministries using ICT in governance process/functioning.

Usage

The State has performed well in the Usage Sub-Index and substantial improvement is required only in the Individual Category.

- *Individual*- Incentives for individuals to seek and adapt broadband connectivity.

Policy Changes

- Continue the progressive steps adapted till date.
- Impetus needs to be given to physical infrastructure for facilitating individual education enrolment, including ICT-specific education, as has been done in Chandigarh, Kerala and Karnataka.
- Proactive policy by the Government for Infrastructure Development.
- Provide fiscal incentives for computer manufacturing and its distribution to increase Individual Readiness and to set up computer kiosks for access.
- Government-owned computer kiosks across the State with PPP model for improved Individual Readiness and Usage.
- Introduce ICT usage in governance and functioning of Ministries similar to Delhi, Karnataka, Rajasthan, Andhra Pradesh and Maharashtra



Action Plan

- The ICT Policy of the state does not have a section on Regulatory and Legal Policy. The State Government to added these sections while reviewing the policy.
- Opening up of more colleges with the help of private players needs to be in place as has been done in Karnataka and Tamil Nadu.
- The Government should aim at increasing the density of Internet kiosks as has been done by Tamil Nadu and Karnataka. They should be set up in schools, markets, etc. which would provide Internet facilities as well as training. It can also associate with leading institutes for providing online training in computer courses as has been done in Kerala and the North-Eastern States.
- The State Government to initiate discussions with private players to provide ICT infrastructure as has been done by Andhra Pradesh, Tamil Nadu, Delhi, Goa, Punjab, Kerala, Maharashtra and Gujarat
- The State government can initiate discussions with financial institutions/banks to provide loans at low interest rates to citizens for purchase of computers. Taxes may be also be reduced on ICT hardware to bring down the cost of computers in the State

The Sate can set up Internet kiosks as a follow-up on policy measures.

6.3.15 Chattisgarh

Among the new States of Jharkhand, Uttaranchal and Chattisgarh created in 2000, Chattisgarh has shown maximum potential. It ranks first in the group.

Sub Index	Rank (Level 1,2,3...6)	Absolute Score
Usage	L3	-0.32
Environment	L3	0.01
Readiness	L4	-0.97

Key Indicators to be tackled

Environment

In the Environment Sub-Index it is the Political and Regulatory Environment and the Infrastructure

Environment that the State needs to lay emphasis on. The variables identified are:

- *Political and Regulatory*- proportion of policies taken up for:
 - ICT companies
 - Security
- *Infrastructure*- Distance from the nearest:
 - Post Office
 - Public telephone
 - Computer Training Centre
 - College
 - Medical Store.

Readiness

In the Readiness Sub-Index all the three categories — Individual, Business and Government — need to be improved upon. The variables that are to be addressed are:

- *Individual*- Total number of :
 - Engineering students/total technical students
 - MCA students/total technical students
- Open Internet Kiosks/ Centres as an important State-level programme to improve Individual Readiness
 - e.g. Akshaya- Kerala
 - North-Eastern region- Sikkim CIC program
- Encourage individuals to avail broadband connectivity/computers and telephone ownership
- *Business*- Proportion of ICT Exports to total exports from the State
 - Employment per IT Park
- *Government*- Government expenditure on secondary education
 - Number of Ministries using ICT in governance process/functioning.
 - Percentage of top officials with online training programmes.

Usage

In the Business Usage Category, the State has done well. However, it needs to improve its Individual and Government Usage. The variables that emerge important are:



- *Individual*- Incentives for individuals to seek and adapt broadband connectivity
- *Government*- Accessibility of information and services by the citizens
 - Number of e-Governance projects undertaken.

Policy Changes

- Address the issues of IPR in the ICT Policy as has been done by Andhra Pradesh, Gujarat, Karnataka, Kerala, Maharashtra, Rajasthan, Delhi, etc.
- An effective legal machinery to prevent piracy of ICT products to be put in place.
- Impetus needs to be given to physical infrastructure for facilitating individual education enrolment including ICT-specific education as has been done in Chandigarh, Kerala and Karnataka.
- Provide impetus to higher education.
- Government to provide fiscal incentives for computer manufacturing and its distribution to increase Individual Readiness and set up computer kiosks for access.
- Government-owned computer kiosks across the State with the PPP model for improved Individual Readiness and Usage.
- Proactive Political and Regulatory Environment the need of the hour.
- Introduce a policy to facilitate ICT exports from the State and set up more IT parks as has been done by Karnataka, Maharashtra and Andhra Pradesh.

Action Plan

- The ICT Policy of the State does not have a section on Security and Legal Policy. The State Government to added these sections while reviewing the policy.
- Give financial support to private entrepreneurs to improve the density of colleges and also for equity in distribution of education as has been done in Karnataka Chandigarh and Delhi.
- Open up of more colleges with the help of private players as has been done in Karnataka and Tamil Nadu.
- The Government should aim at increasing the density of Internet kiosks as has been done by Tamil Nadu and Karnataka. Internet kiosks should be set up in schools, markets, etc. which would provide Internet

facilities as well as training. It can also associate with leading institutes for providing online training in computer courses as has been done in Kerala and the North-Eastern States.

- The State Government to initiate discussions with private players to provide ICT infrastructure as has been done by Andhra Pradesh, Tamil Nadu, Delhi, Goa, Punjab, Kerala, Maharashtra and Gujarat.
- The State Government can initiate discussions with financial institutions/ banks to provide loans at low interest rates to citizens for purchase of computers. Taxes may be also be reduced on ICT hardware to bring down the cost of computers.
- The State can set up Internet kiosks as a follow-up on policy measure.
- The State Government also needs to give concessions to industries/companies for ICT activities similar to Haryana, Maharashtra, Chandigarh and Delhi.
- If there are no cyber laws that confer legal status to electronic transactions and documents in the State, they need to be in place immediately.
- Provide incentives like tax concessions etc to attract investment for the private sector to build IT parks as has been done in Maharashtra, Tamil Nadu, Andhra Pradesh, Karnataka, etc.

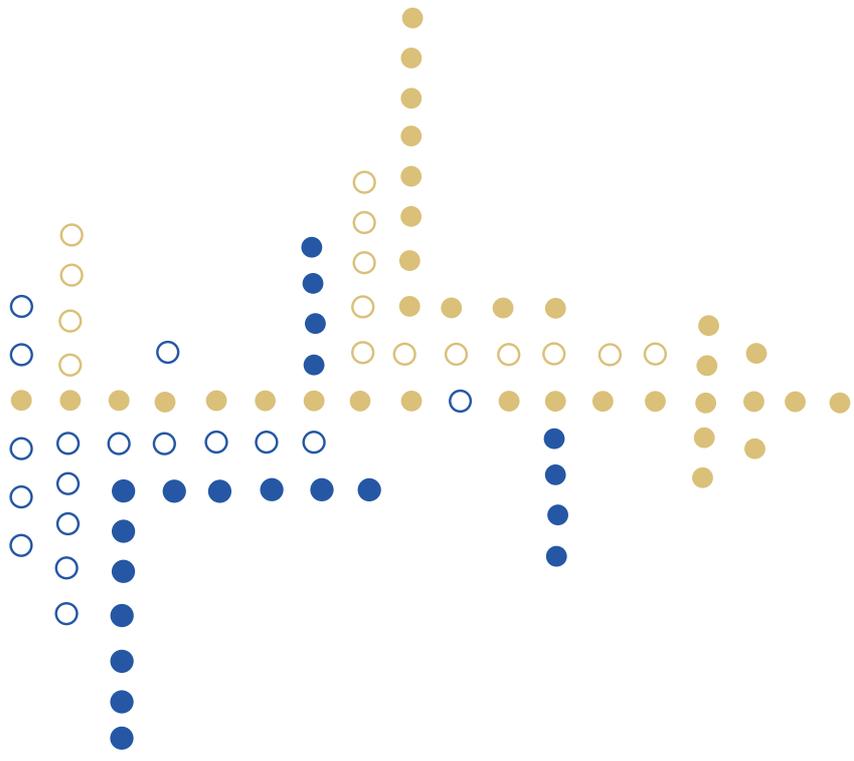
6.4 Key Findings

- Our analysis of the e-Readiness of the States reveals that the southern States - Andhra Pradesh, Karnataka, Tamil Nadu and Kerala - have remained leaders over the three-year period, while the northern States of Chandigarh, Haryana, and Rajasthan have shown vast improvement. Apart from these, Sikkim from the North-Eastern region has done exceedingly well. Wide coverage of community information centers (CICs) over the last named State has made an enormous impact.
- The Output and Employment Multipliers calculated for key Indian States show that ICT plays an important role in States, irrespective of their stage of development. Developing States like Rajasthan and Madhya Pradesh have a high Employment Multiplier and Low Output Multiplier indicating the existence of high involvement of skilled labour in the IT services area, whereas the high “vertical linkages” in the developed States of Maharashtra



and Gujarat is shown by the high Output Multiplier and Low Employment Multipliers.

- Another important observation is that old technologies are demand driven and take time to penetrate whereas new technologies like ICT are more supply driven in the sense that the rate of diffusion is very high in this technology in both developed and developing regions. Thus, a proactive role by the Governments of all States would yield positive results in economic development. Therefore, there is greater scope in these technologies for diffusion agents to influence the diffusion process, implying that the outlay for the ICT sector should be increased substantially in order to achieve maximum benefits of ICT.



Annexures

