A Survey of Rural e-Government Projects in India: Status and Benefits

View From Practice

Narasimhaiah Gorla
Associate Professor, Department of Management Information Systems, American University of Sharjah, Sharjah, UAE.
E-mail: ngorla@aus.edu, n.gorla@yahoo.com

Out of over one billion Indian population, about 70% live in 600,000 villages. Much of this rural population is isolated in terms of access to information, materials, and markets, despite the strong growth of IT industry in India. The adult literacy rate in India is about 59%. Teledensity (the number of telephone lines per 100 people) is less than 1.5% in rural, while it is more than 15% in urban areas (Rao, 2005). The rural areas are thus relatively disconnected from the national mainstream.

The UN Global e-Government Survey (Department of Economic and Social Affairs, 2003) provided comparative ranking of countries based to two indicators: e-Readiness and e-Participation. India ranks 87 out of 173 nations in e-Readiness. The E-Readiness of a nation is determined by Web measure index (India rank 32), Telecommunication infrastructure index (India rank 138), and the Human capital index (India rank 146; Department of Economic and Social Affairs, 2003). E-Participation index measures 21 citizen informative and participatory services and facilities (India rank 22).

Digital divide is the gap between those who can effectively use new Information & Communication Techniques (ICT) and those who cannot. ICTs remove barriers to information asymmetries and create opportunities for the integration of rural populations in the global marketplace. Many e-Government initiatives that deliver services online in rural areas are being attempted in India in spite of many infrastructure constraints. In this article, we review 15 popular projects that are developed exclusively for rural regions (e-Government Web sites). We assess the status of these projects using an e-Government progression framework, analyze the benefits achieved, and provide recommendations for better utilization of these projects.

1. STATUS OF E-GOVERNMENT PROJECTS

An e-Government status framework is developed (Figure 1) using Watson and Mundy (2003) strategic framework as one dimension (called “design” dimension) and Infodev (2002) implementation phases as the other dimension. The rural e-Government projects are
mapped into this framework. The “design” dimension has three phases: initiation, infusion, and customization. The initiation phase emphasizes on providing the citizens with a single point of access to government information through Web portals. Services provided by the individual agencies are confined to people residing in the areas where the kiosks are set up, as these kiosks are not connected. In the infusion phase, citizens can make payments through Web. Information kiosks are all connected offering similar services to citizens. In the customization phase, citizens electronically maintain personal profiles of their financial transactions with government. In this phase, customer relationship management techniques are implemented and users can buy and sell online. The “implementation” dimension has three phases: publish, interact, and transact. Publish phase involves publishing government information online with local language support. In Interact phase, citizens actively participate in the governance process with a two-way communication. These sites provide feedback forms, e-mail facilities, or conduct public meetings where people can share their ideas. Transact phase involves conducting transactions online, such as, e-commerce.

**Akashganga**: (www.akashganga.com) The project uses IT to help rural milk producers by integrating all operations from procurement of milk to accounting using DISK (Dairy Information Services Kiosk). Akashganga facilitated more than 50,000 dairy farmers in Gujarat (Cecchini & Scott, 2003) and implemented in 600 locations (Rao, 2005). It stores the details of the transactions with its accounting software and displays the information to the public.

**E-choupal**: (www.echoupal.com) In order to protect agriculture farmers from opportunistic practices of intermediaries, “e-choupal” (meaning a village meeting place) was established. The project helped farmers in 29,500 villages using 4,200 kiosks in six states (Brewer et al., 2005). It provides farmers with information relating to farming equipments, weather, crop, and the like. The project does not maintain any financial details of any farmer. The system provides farmers with the latest market information and also facilitates two-way communication by receiving valuable suggestions and opinions.

**TNCDW** (Tamil Nadu Corporation for Development of Women): The project is aimed at social and economic empowerment of women in Tamil Nadu state. TNCDW maintains
a database containing the details of citizens, births and deaths, land and revenue records. The project encourages NGOs and women to conduct research on state and gender policy issues. It establishes a relationship with the citizens by encouraging them to participate in its various programs on income generation, vocational training, discussions, etc.

**Drishtee:** (www.drishtee.com) The project provides online buying and selling facilities to citizens through its e-commerce and agri-business services. It maintains the database of people as it issues ration cards. The system tries to redress the grievances raised by the public and enhances customer relationship. It enables the citizens to get government information, education, employment, etc. Drishtee operates 500 kiosks in the northern and eastern states of India and each kiosk is managed by a village entrepreneur.

**Gyandoot:** The goal of the project was to establish community-owned, technologically innovative and sustainable information kiosks in a poverty-stricken, tribal dominated rural area of Madhya Pradesh. Kiosks have been established in the village Panchayat buildings. The entire network of 31 Kiosks covers 311 Panchayats, over 600 villages, and a population of around half a million. Gyandoot maintains financial profiles of citizens and offers services such as BPL (Below Poverty Line) list. It provides education online with user interface in local Hindi language.

**RASI:** RASI provides Internet and voice connectivity to the rural villages of Madurai district in Tamil Nadu. The network technology is based on the corDECT system located roughly 25 kilometers from the kiosks. Internet facility is provided with the help of Wireless Local Loop (WLL). RASI facilitates the citizens with online buying and selling of commodities, besides providing voice mail, chatting, and e-mail. Villagers can get caste and birth/death certificates through the RASI system.

**Jagriti E-Sewa:** (www.jagriti.com) It touches the rural life with activities from agriculture, financial, travel, and e-Government to communication services. The whole system can be adopted to any language in the least possible time. Each Jagriti e-Sewa kiosk is set up in order to serve approx. 25,000–30,000 people. Its activities, named as d-commerce (desi commerce), include both physical and electronic mode involvement.

**N-Logue:** (www.n-logue.com) With 2,300 kiosks as of 2005, N-Logue employs TeNet-designed WLL technology for its village-level communications. It accepts requests from rural poor and provides financial facilities. The kiosks provide information on markets, climate, and soil to the farmers, in addition to handling public grievance.

**Lokmitra:** (www.himachal.nic.in/lokmitra/lokmitra_hdr.htm) Developed by the National Informatics Centre (NIC) in Himachal Pradesh State, Lokmitra maintains a database with details on public, such as address, contact number, age, driver license, etc. It has a grievance redressal system, clarifies the doubts of citizens on various issues, has an e-mail facility to provide communication, and supports local language. It invites people to share their ideas and provides feedback to enhance its service content. People can buy and sell products online.

**TKK (Tata Kisan Kendra):** (www.tatatkk.com/kisan_kendra.htm) TKK provides farmers with services for optimum utilization of nutrients, plant protection, chemicals, water, and seeds. TKK tracks key parameters such as soil, ground water, and weather on a real-time basis with the help of Geographic Information Systems (GIS) and satellite mapping technologies. Retail outlets at each Kendra are set up to sell products but are not made online.

**Bellandur:** Developed by COMPUSOL, it is the India’s first ICT enabled Gram Panchayat e-Government solution. Bellandur is situated about 20 km from Bangalore. All district offices, taluka offices, and gram panchayats are connected. Committee meetings are
aired on cable television. The software handles records of property, tax collection, birth and death certificates, and other financial details. It conducts meetings for committee members, allowing villagers to interact.

**Janmitra:** Janmitra is an integrated e-platform that was implemented in the Jhalawar district in Rajasthan and is replicated in the state of Uttaranchal. All sections and departments of collectorate are connected through Local Area Network (LAN). The remote computers in tehsil and block offices are connected through dial-up facilities. The rural Intranet provides e-Government, e-education, e-health, and e-commerce services to the people through Community Information Centers.

**eUttaranchal:** (www.euttaranchal.com) The project is aimed at bringing people of Uttaranchal state (renamed as Uttarakhand) closer, with the purpose of enabling natives to share their culture, tradition, news, and other thoughts from generation to generation. The Web site allows meetings and sessions in big cities to small villages, with “general awareness meetings” in remote villages. The Uttarakhalis are expected to connect to the entire state, entire nation, and entire world. The project helps promote quality education by providing advice through career guidance sessions.

**Telemedicine:** Through the project, Apollo Hospitals provide super specialty healthcare to millions of rural Indians. Telemedicine is the use of ICT to facilitate healthcare when patients and doctors are separated by distance. Using the software Med-Integra, patients and specialists can interact visually. It presently operates in 35 telemedicine centers in several states. More than 6,000 patients were benefited, and over 3,500 teleconsultations, covering specialties from neurosurgery to pediatric cardiology, were successfully done (Manohar, 2005).

**LOKVANI:** The project is a public-private partnership program that was implemented within the Sitapur district (88% rural population and 39% literacy rate) of Utter Pradesh state. The objective is to “connect” rural citizens to the strategy makers in a seamless way. The project incorporates “right to information” policy and offers services, such as grievances and petitions, land records, tender services, employment services, and information related to government schemes. More than 48,000 complaints were filed out of which more than 90% were resolved in a 17-month period.

### 2. BENEFITS FROM E-GOVERNMENT PROJECTS

The benefits from the 15 rural e-Government projects are categorized into economic and social (Table 1). Typically, economic benefits are achieved through employment for the rural youth, better prices for the farmers’ produce, reduction of produce loss, etc. Social benefits are obtained through knowledge acquisition for farmers, helpful advice on agriculture, health, education, finance, and insurance, and citizen’s enablement to be part of government decision making.

### 3. RECOMMENDATIONS

The following are some lessons to future rural e-Governance initiatives in India:

1. While the emphasis in the past has been mostly on financial, agricultural, and citizen services, there should be more emphasis placed in the applications related to e-commerce, health, and involvement of rural public in government decision making (for example, LOKVANI).
<table>
<thead>
<tr>
<th>Project (coverage)</th>
<th>Economic benefits</th>
<th>Social benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AKASHGANGA (Gujarat, Maharashtra)</td>
<td>• speedy and efficient method of collecting milk</td>
<td>• knowledge acquisition by farmers through training • reduces corruption by reducing intermediaries</td>
</tr>
<tr>
<td>E-CHOUPAL (6 states)</td>
<td>• reduces farmers’ time and costs in acquiring information on weather, market prices, soil • farmers fetch better prices for their produce as they can sell either to ITC or sanchalaks</td>
<td>• farmers can take right decisions with the information from kiosks. • gives knowledge about latest techniques of agriculture</td>
</tr>
<tr>
<td>TNCDW (Tamilnadu)</td>
<td>• provides services with low cost • provides employment for women by encouraging micro-entrepreneurship</td>
<td>• convenience with ICT motivates employees • services provided as per public needs</td>
</tr>
<tr>
<td>DRISHTEE (6 states)</td>
<td>• offers services with low cost • employment to work as soochanalayas operators</td>
<td>• encourages citizens to involve in governance process</td>
</tr>
<tr>
<td>GYANDOOT (MP)</td>
<td>• farmers avail better prices as auction prices are online. • grievances handled online saving time and money</td>
<td>• services are provided as per public needs</td>
</tr>
<tr>
<td>RASI (Tamilnadu)</td>
<td>• generates income from computer education</td>
<td>• provides public health information</td>
</tr>
<tr>
<td>Jagriti E-Sewa (6 states)</td>
<td>• reduces traveling costs as public get information from jagriti centres.</td>
<td>• services in regional languages benefit laymen.</td>
</tr>
<tr>
<td>N-LOGUE (Tamilnadu, MP, Punjab)</td>
<td>• offers low cost services</td>
<td>• services in local languages • offers e-Government, micro-finance, banking and insurance services</td>
</tr>
<tr>
<td>LOKMITRA (Himachal Pradesh)</td>
<td>• remote access to government information • employment opportunities through information centers.</td>
<td>• provides a platform for people to interact on common interests (e.g., matrimonial)</td>
</tr>
<tr>
<td>TKK (UP, Haryana, Punjab)</td>
<td>• provides low cost information on crop, climate, insurance, credit, pest attacks • low interest credit</td>
<td>• farmers can get vital information directly from agronomists</td>
</tr>
</tbody>
</table>

Continued
TABLE 1. Continued

<table>
<thead>
<tr>
<th>Project (coverage)</th>
<th>Economic benefits</th>
<th>Social benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>11 BELLANDUR PROJECT (Karnataka)</strong></td>
<td>• increase in revenues for the local body providing services. • provides employment/business opportunities</td>
<td>• citizens get to know about their rights and responsibilities in the society • construction of roads and bore wells with generated incomes • health of humans and animals can be enhanced from online information</td>
</tr>
<tr>
<td><strong>12 JANMITRA (Rajasthan)</strong></td>
<td>• provides information relating to education with low fee • farmers get better prices for produce since daily mandi rates are online. • certificates downloaded in less time/cost</td>
<td>• citizens share their culture, tradition, news, and other thoughts • citizens obtain advice through career guidance sessions • rural patients can get the advise of medical specialists • citizens get information on tenders, pension, land records online</td>
</tr>
<tr>
<td><strong>13 eUttaranchal (Utteranchal)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>14 Telemedicine (several states)</strong></td>
<td>• saves medical costs for specialist services</td>
<td>• citizens share their culture, tradition, news, and other thoughts • citizens obtain advice through career guidance sessions • rural patients can get the advise of medical specialists • citizens get information on tenders, pension, land records online</td>
</tr>
<tr>
<td><strong>15 LOKVANI (UP)</strong></td>
<td>• cheaper complaint redressal • extra income to kiosk operators</td>
<td></td>
</tr>
</tbody>
</table>

2. Analysis of previous projects indicates applications in one area or just few areas. Future projects should provide a comprehensive set of common applications to rural public, including all socioeconomic aspects.

3. Based on our analysis, fewer projects reached the final phase of implementation compared to the projects that reached the final phase of the design phase. Future projects should be designed and implemented with incremental approach in order to realize full benefits.

4. There should be more involvement of citizens in government decision making, whether rural or urban. Typical e-Governance applications in these areas are e-voting and e-mail campaigns that help express opinions on public policies relating all aspects of life including food, transportation, and environment.

5. Graphical User Interfaces (GUI) should be utilized in various e-government applications. For example, Jadoo (Chand & Dey, 2006) provides easy interface to computer illiterates, which can lead to gradual elimination of kiosk operators.

6. Evaluation framework is needed for building future successful e-Government projects. Such examination will provide clues to the administrators and project managers for areas of improvement. Variables for such a metric include service usage levels by rural citizens, satisfaction achieved, diversity of services, reduction in poverty, empowerment of citizens, and project replicability.

7. In order to allocate resources optimally to rural areas and to initiate new e-Government projects, e-readiness and e-participation indexes should be computed for each district in each state.
8. In order to continue to reap benefits from the rural e-Government projects, plans should be laid out for sustainability and future growth for size and functionality. The progression framework presented in this article can be utilized for these purposes.

REFERENCES


Narasimhaiah Gorla is an Associate Professor of MIS Department at the American University of Sharjah, UAE. Prior to this appointment, he held faculty positions in Administrative Staff College of India, Wayne State University, University of Cincinnati, Cleveland State University, and Hong Kong Polytechnic University. He has a Ph.D. from University of Iowa and post graduation from Indian Institute of Management Calcutta. His research interests include database design, data warehousing, software engineering, outsourcing, e-Government, and information management. His research have appeared in Communications of the ACM, Information & Management, IEEE Transactions on Software Engineering, IEEE Transactions on Systems, Man, and Cybernetics, Information Systems, Journal of Computer Information Systems, Data and Knowledge Engineering, and Journal of Systems and Software.