

SECTION VII

e-Governance Success Stories Sustainability

Sustainability of e-Governance Projects

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There have been a number of studies over the years highlighting successes and failures of various e-Government Projects. e-Government - also commonly referred as e-Governance in India - generally means Electronic Government. The e-Government definition varies from person to person and place to place. A few examples are:

- Use of Information and Communication Technology to make Government more efficient
- Use of ICT to facilitate citizens' access to various Government services and improve the services to citizens, businesses and other Government departments
- Use of ICT to make Government more transparent and accountable to citizens

In each case, the key parameter continues to be citizen centricity and making government services available to common citizens easily, with quick response and without corruption. In India, through the National e-Governance plan (NeGP), significant strides have been made across the country to implement e-governance projects to meet the underlying objectives of satisfying the needs of a common citizen.

It is often observed that many IT projects in general, and many e-governance projects in particular, fall into a state of disuse or cease to serve any meaningful

objectives, over a period of time. This obviously leads to failure of the project in the medium to long run.

Various studies have been conducted to define success and failure of e-governance projects. The important questions that remain are - why do many e-Gov projects fail? And how can e-Gov projects be made more sustainable and effective over a long period?

Literature on Success, Failure and Sustainability of e-Gov projects

Heeks and Bhatnagar (1999) proposed an analytical framework to understand the “critical success factors (CSF)” and “critical failure factors (CFF)”. Through this analysis, they have proposed ten critical factors responsible for the success or failure of an e-Gov initiative. These are - *Information, Technology, People, Management, Process, Culture, Structure, Strategy, Politics, and Environment*.

Heeks (2003a) developed the Design–Reality Gap Model for defining failure of e-Gov projects. This involves answering the following questions.

- Where are we today?
- What was the ultimate objective to reach? (based on the initial design of the project)
- What is the Size of the Gap between the two items above? *The answer to this question defines the relative success or failure of a project.*

Kumar & Best, (2006) addressed the issue of why some of the e-Gov projects succeed initially in delivering the desired services to their communities and fail subsequently. They looked at long term sustainability along multiple dimensions. Based on their study the following factors were highlighted by them as key to sustainability of e-Gov projects. This was based on a study of the SARI project in Tamilnadu.

- Lack of Adequately Trained Personnel
- Lack of Sustained Public Leadership, Commitment, and Institutionalization
- Lack of Consistent Evaluation and Monitoring

- Lack of Involvement of All Stakeholders
- Shift in Existing Power Relationships due to Kiosks (CSCs)

They also emphasized that in their study, among all the critical failure factors, “information” (the content, data, forms, etc) did not appear and neither did “technology” (the hardware, network, software) appear. This is particularly interesting since it is these factors that are so often discussed when considering e-government interventions (how you get the right hardware out there, how you design the software system, how you develop the local content, etc.).

It is important to understand that success of a project and sustainability of a project are not the same. A project may be successful, but not sustainable. Success of an e-Governance project implies that the defined objectives of the project have been met to certain degree. However, it is very much possible to sustain a project without meeting the defined objectives (which is basically a failure) of the project.

While un-sustainability definitely leads to failure of a project, this may be viewed as only one of the causes of failure of a project. Failure to achieve any meaningful objectives or failure to make significant positive impact on related performance parameters is obviously a very important cause of the failure of a project. However, even a project making significant impact in its initial stages fails, if it is not able to sustain itself. Thus sustainability of a project becomes a very important aspect of effective management of projects in the long term.

Sustainability becomes an important consideration, especially in the case of e-Governance projects, as non-sustainability will be clearly classified as failure. From various studies done, it is apparent that sustainability is a necessary condition to be successful, but not sufficient. It is because only sustainable ICT initiatives can support long term socio-economic development of a community, especially in developing countries

Computer Society of India has been recognizing good efforts in the area of e-Governance for the last 7 years through CSI-Nihilent e-governance awards. A need to look at the award winning projects in the past and examine their sustainability over years was felt and thus the award winning projects during year 2006 were taken up as case studies to evaluate where they are after a gap of

five years, in 2011. Four projects, viz., Bhoomi (Karnataka), BangaloreOne (Karnataka), e-Dhara (Gujarat) and National Portal of India (Government of India) have been considered. There were a few award winning projects which were either not found to be sustainable over the years or the data submitted was not sufficient for determining the sustainability. Based on our evaluation framework used in the awards process and various studies conducted in this area; we used the following six factors to evaluate the sustainability status of each of the projects over the last five years.

- *Accessibility and Usability*
- *Trustworthiness/Credibility/ Transparency*
- *Project Monitoring*
- *Leadership and Administration*
- *Financial Sustainability*
- *Integration with related systems in the Government*

Brief status of each of the projects against these five factors is given here.

Bhoomi

Bhoomi is the Land Records computerization effort by the Government of Karnataka. Work on the project commenced in 1999. In 2001, the first online services were provided to the citizens and other stakeholders of the project

Bhoomi has not only sustained its commendable levels of service achieved in 2006, but has also made very significant progress over the past five years, i.e., from 2006 to 2011.

Currently, as many as two and half crores of property records are being issued to citizens every year, under the Bhoomi programme. The Record of Rights (ROR) is now made available at the doorsteps of farmers also through as many as 800 tele-centres, in addition to the erstwhile centres at the taluka level. The mutation process on an FIFO basis has now been extended to the village as a unit from the erstwhile sub-taluk level unit.

Initiatives contributing to the sustainability success of Bhoomi

The success of Bhoomi at sustainability has been ensured by several initiatives undertaken by the Bhoomi management team. The different initiatives have been discussed below, in a brief manner.

Accessibility and Usability

It was observed that many of the common farmers were not comfortable with the idea of having to collect a computerised copy of the ROR, from the Taluk level centres. In response to this observation, tele-centres have been established in rural areas to deliver the ROR at the doorstep of farmers. This scheme – called Nemmadi - was initiated in 2007 and now boasts of as many as 800 tele-centres. This has been implemented in a public-private partnership mode. Nemmadi has now become the Citizen Service Centre scheme now, running on Bhoomi as its core application. This widening of services out of the Nemmadi centres has contributed to the financial viability of the individual centres, thus ensuring the sustainability of this mode of operation, and hence ensuring the sustainability of Bhoomi itself.

A further initiative by Bhoomi to increase its accessibility and usability of the system by the village accountants, a majority of whom are aged and computer illiterate, is manifested in the form of adoption of technologies like Universal Handheld Devices and e-Pens., for updating the crop data.

Many of the major stakeholders – the farmers - are illiterate or poorly educated. They are kept informed of progress on each major stage of the processing of their transaction, through sms.

Trustworthiness/Credibility/Transparency

Bhoomi has also implemented initiatives aimed at increasing the trustworthiness and credibility of the system, which include initiatives to increase the accuracy and security of data and reliability of the overall system.

They have achieved this through several initiatives like creation of a central repository of all RTCs at the state data centre. This database aggregates and replicates databases at the local – taluk/block levels. Bhoomi also implemented systems to

ensure consistency of data among databases at local levels and the central database and implemented Public Key Infrastructure (PKI) enabled system in more than forty taluks. Under this PKI system, they have provided digital signatures to more than 11000 village accountants, 2000 revenue inspectors, 1000 deputy tahsildars and 200 tahsildars. They have also implemented Active Directory (AD) to effect Centralized Authentication in Bhoomi. Biometric credentials have been integrated into the AD to prevent any unauthorised access to Bhoomi. At the local administration levels, passwords are maintained. Effective virus protection has been provided at the State Data centre and local databases levels.

To increase transparency, information about the progress on each major stage of the processing of their transaction, is disseminated to farmers, through SMS.

Project Monitoring

The Bhoomi team has also employed effective project monitoring mechanisms to ensure that the project runs smoothly, project continuity is ensured and enhancements are implemented effectively. The specific initiatives include establishment of a separate Bhoomi Monitoring Cell, establishment of a Bhoomi Technical Wing and implementation of a proper Exit Management Plan to ensure smooth running of the project, in case a technical resource or a technical partner leaves the project.

Leadership and Administration

Bhoomi has received constant support from the top political leadership of Karnataka. It has also received constant and consistent support from the bureaucracy. The government has created a special post at the secretary level called Secretary (Bhoomi & UPOR). The project has been under the supervision of the same individual for more than the past five years. The concerned official is responsible for computerisation of Land Administration in Karnataka. This is also expected to facilitate the IT based integration across different activities related to Land Administration in Karnataka. Further, to strengthen the concerned administrative set-up, the post of a director and two posts of special deputy commissioners have been created.

Financial Sustainability

The project is self-financing. The Government is earning around 20 crores from Bhoomi, a major share of which comes from fees charged to citizens for distribution of RTCs. This has actually resulted in a significant amount of surplus. This has enabled the Government to actually reduce the fees from Rs 15 per copy to Rs. 10 per copy. However, the Bhoomi management has been careful in keeping the share of the tele-centre operators the same, keeping in view the need to keep these centres financially viable too, if Bhoomi is to sustain itself on this large scale of operation.

Integration with related systems in the Government

Bhoomi has achieved many successes at integrating itself with related Government systems.

Most fundamentally, it has achieved a high level of integration with the registration system in Karnataka, called Kaveri. Any land property registration now requires what is called as a pre-mutation sketch. The programme of getting these sketches and integrating the same into the registration process is called Mojini. Mojini makes it imperative for any land registration transaction to submit a pre-mutation sketch. This entailed the need to modify the concerned law. Full integration of Bhoomi with Kaveri has been further achieved through linking the two systems electronically and making it mandatory for the sub-registrar to ensure the ownership of seller over the property that is being transacted. A successful registration automatically results in the concerned mutation and the Bhoomi records get updated. This in turn results in absolutely accurate data in the Bhoomi database, which further increases the credibility and trustworthiness of the system, which in turn further contributes the sustainability of Bhoomi.

An additional degree of integration of Bhoomi has been achieved by subsuming the Land Acquisition activity by the Government into Bhoomi.

BangaloreOne

BangaloreOne (henceforth called B1) is the Citizen Service Centre Project of the Government of Karnataka in Bangalore. It is operated using the PPP model. It

gives citizens tangible benefits by providing one-stop solution to activities like bill payments, submission of applications etc. The different government departments, in addition to the common citizen, benefiting by B1, are BESCO, BWSSB, BMP, RTO, BSNL, the Police Department, KSRTC, Bangalore University etc. Even private organizations like Telecom companies, Insurance companies, etc. are benefited. Thus, while B1 is primarily a G2C initiative, it is also a G2G and G2B project.

Over the past five years, the number of B1 Centres has gone up from 14 to 77. A total of 46 million citizens had availed themselves of the services till September 2011. The total number of transactions on B1 has gone up from 19.3 lakhs in 2005-06 to 108.7 lakhs in 2010-11. In addition, B1 has also been giving services to multiple organizations, including both Government and private sector organizations, thereby significantly increasing the utility of B1 to the common citizen as well.

Initiatives contributing to the sustainability success of B1

The success of B1 at sustainability has been ensured by several initiatives undertaken by the Government of Karnataka. The different initiatives have been discussed below, in a brief manner.

Accessibility and Usability

As has already been mentioned above, the number of centres has gone up from 14 to 77. This has definitely increased the access to B1 services by several times.

In addition, B1 has taken measures to ensure uninterrupted services to citizens through deliberately building redundancy into the system. The different aspects into which redundancy is built include specific measures like maintenance of 15% leave reserve in manpower, UPS and diesel engine generator for power, load balancing and fail-over mechanism for systems, offline server at each of the centres in case of network disconnection and a disaster recovery site at the State Data Centre at Bangalore. The database here replicates transactions at the various B1 centres. However, the DR site is not in a different seismic zone.

B1 has also improved response time very significantly through implementation of AJAX based interface.

B1 has also implemented mechanisms to monitor the quality of services to citizens. These include implementation of EQMS (Electronic Queue Management System) in all centres to monitor waiting time for citizens under varying conditions of load, which includes generation of MIS reports to monitor the overall performance of B1, based on data analysis by data analysis software. All this also helps significantly in taking suitable actions like technology up-gradation or addition of centres. In addition, operator attendance monitoring has been automated to ensure availability of services to citizens on a 24 x7 basis.

B1 also generates automated reports about bounced cheques, for consumption by its institutional customers. In addition, B1 has established a payment grid which tracks the flow of payments to the institutional customers and monitors whether the payments finally reach their intended destinations or not.

Trustworthiness/Credibility/Transparency

B1 employs the concept of digital signatures to achieve authentication, authorisation and non-repudiation. Public and private key methodology is adopted to ensure that all transactions are digitally signed. Internal transactions are secured using SSL technology. Also B1 employs leased lines from the centres to the B1 centre and the State Data centre to ensure better security.

Project Monitoring and Management and Leadership& Administration

A separate directorate under the e-Governance department has been established. An all-India cadre officer is in charge of B1 operations. This ensures continuity of management supervision.

Financial Sustainability

The established centres are financial self-sufficient under the PPP model. The Government provides annual budgetary support for new centres.

Integration with related systems in the Government

B1, considering the type of services it renders has to be integrated with the different institutional customers of its and intermediaries like banks. Technical integration with these customers is effected through use of various web service models and middleware.

National Portal of India (NPI)

NPI is a Mission Mode Project under the NeGP. The portal serves as a one stop source for all Government information and services. It is a gateway to over 7000 websites of Government of India (GOI). Thus it provides a single interface to access any of these websites. It contains a huge repository of Government information. It encompasses all ministries and departments of the GOI and the state departments, as well as district administrations. It is developed entirely by the National Informatics Centre (NIC).

Performance and recognition of the NPI

The number of hits to the NPI has increased from 135 million in 2006 to around 915 million in 2011. Also, the number of registered users has gone up from 4940 to 81431, during the same period.

NPI content has grown significantly richer over the past five years, in respect of both its breadth and depth.

In addition to viewing information, the citizens can also carry out transactions using the portal. The number of such services offered has also grown over the years.

NPI has been recognized virtually every year for its superior performance, since 2006 in various forums. NPI has also introduced a facility for users to register their feedback on individual features and services offered by the portal. The users have been quite enthusiastic in giving their feedback. From the feedbacks it seems that a large number of users are highly satisfied with the portal.

Initiatives contributing to the sustainability success of NPI**Accessibility and Usability**

The NPI portal has been designed in a citizen centric manner. Information has been presented keeping the citizen's point of view in mind, rather than the departments' viewpoint.

The NPI is supported by a highly effective Content Management System (CMS). The CMS renders continuous update of the contents easily possible. It also allows flexibility for easy modifications in the content architecture of the portal.

Query facilities through an Advanced Search feature have been provided on the NPI. Also the NPI incorporates relevant linkages across different modules to provide the user a holistic view. Both the features above aim at providing better information to the users in less time.

The content is also presented in two languages, viz., English and Hindi. Unicode compliant Hindi version of the NPI was released in 2007, thereby further increasing the possibilities for an enhanced use of the portal. The NPI design complies with the WCAG guidelines which define accessibility requirements. This has made the portal universally accessible, usable even by differently-abled persons.

The NPI provides users with a facility to provide feedback on individual services offered. This feedback and suggestions are taken into consideration while incorporating improvements and new features into the portal.

The portal provides users with facility to customize the home page to a certain extent, thus making it more attractive to use for the citizens. The portal has also provided citizens with the opportunity to participate in nation-wide opinion polls etc, thereby facilitating citizen participation in the process of Governance.

The State-of-the art load balancing implemented at network level, ensures low system response times for users.

Trustworthiness/Credibility/Transparency

The Content Management System also ensures security of the data contained on the portal. The active components of the portal are devised to function in a failover mode and have built-in redundancy. The Disaster Recovery site is located at Hyderabad. The deployment of clustered server components ensures simultaneous service to millions of users and availability of the portal during any individual node failure.

Project Monitoring and Management

The feedbacks received on the NPI, are managed by using the User Relations Management (URM) System of the NPI.

A Content Advisory Committee has been set up, under the chairmanship of the Additional Secretary, DARPG, which concerns itself with populating and maintaining content on the portal. It consists of members from different ministries, departments and states. It meets regularly for formulating/revising policies regarding content distribution from across the country. The monitoring and management of the project are further aided by the Content Management System. Content Management Policies have been laid down to ensure that users are able to extract the needed information quickly and easily.

Leadership& Administration

The NPI is backed by very strong institutional arrangements which consist of an Apex committee headed by the Cabinet Secretary to the GOI himself, a Project Review and Steering Group headed by the Secretary to DIT, GOI, a Content Advisory Committee headed by the Additional Secretary, DARPG, a Coordination Committee at the level of NIC itself and National Portal Coordinators from different ministries and departments.

Financial Sustainability

The NPI project has been launched under the MMP scheme and thus is funded from the funds allocated for MMPs. Entire implementation responsibility is shouldered by NIC.

Integration with related systems in the Government

The very nature of the NPI requires it to integrate information from across different government bodies into the portal. This integration is achieved through the constitution of the different committees which have a representation of members of the different ministries/departments.

e-Dhara/e-Jamin

e-Dhara is the computerized system of land records in the state of Gujarat. National Informatics Centre (NIC) Gujarat has developed the software for data entry, mutations and issuance of ROR and its implementation. The e-Dhara centres were initially at the taluka places. All 225 Talukas of 26 districts were equipped with a server and clients, with UPS, AC and other necessary equipments.

Gujarat state wide area network (GSWAN) is also available at all 225 talukas of 26 districts across the state. Now eDhara has been integrated with GARVI (the registration system) and is now e-Jamin.

Over the period from 2006 to 2011, the number of property records issued from e-Dhara has gone up from 1.58 crores to 2.65 crores per year. Also, during the same period, the number of mutations has increased from 8.39 lakhs to 12.72 lakhs per year.

Also, in 2006, property records were being issued only from e-Dhara Centres located at Taluka places. In 2007-08, these RORs started getting issued from e-Gram centres at village panchayats. Through centralization of all the 227 land record databases, which was effected in 2010, the RORs can now be delivered from anywhere.

Initiatives contributing to the sustainability success of e-Dhara

Accessibility and Usability

In 2006, villagers had to come to their Taluka place to get a copy of ROR or to make any type of change in the ROR, as e-Dhara Centres were only at these places. In 2007-08, VSAT based e-Gram centres were established and villagers could get their ROR copies through these centres. Now, through centralization of all the 227 land record databases, which was effected in 2010, the RORs can now be delivered from anywhere.

e-Dhara also supports the Gujarati language, for farmers and villagers who are not comfortable with English.

Trustworthiness/Credibility/Transparency

e-Dhara incorporated a feature to capture photographs and finger-prints of owners to enable secured transactions under registration. Finger Print Scanners have been provided at the taluka level for verification by the Deputy Mamlatdar. These and other measures have increased the security of data manifold.

In 2011, all transactions/mutations were centralized by bringing data from all the 227 e-Dhara centres to a central server. This increased central control over data.

Project Monitoring and Management

Process changes and changes to the Bombay Land Code of the Revenue Act have been effected in order to integrate e-Dhara with the Garvi system for land registration. During the same integration effort, arrangements have been made for the SRO to sit in the Mamlatdar's office, in order to ensure full integration, including integration at the physical level. Similarly, facilities for e-Stamping have been provided at each Taluka centre of the e-Jamine (e-Dhara) project.

Monitoring MIS has been made available to concerned officials right from the state-level to the taluka-level for better administrative control of the entire activity.

Leadership & Administration

Computerisation in the Gujarat Government in general and e-Dhara in particular, has enjoyed high levels of commitment from highly placed leaders and bureaucrats in Gujarat.

Financial Sustainability

E-Dhara is generating around Rs. 2 crores per month from the fees charged for the RoR copies being issued from the e-Jamine (erstwhile e-Dhara) system. Thus, it is financially self-sustaining.

Integration with related systems in the Government

e-Dhara has been integrated with the Garvi system for registration. This has made it possible to generate mutation entries and Notice 135-D on the same day as the transaction. The new integrated system has been named e-Jamine. The e-Dhara centres and SRO office have been collocated now, in order to bring in a full degree of integration.

In the RESURVEY that was started in Gujarat under the NLRMP project of the GOI, data from e-Dhara was heavily used and preparatory work was done on the same database.

Auto mutation has further increased the degree of integration between e-Dhara and relevant banking transactions, revenue order transactions, survey settlement mutations and inheritance transactions.

Concluding Remarks

The above four cases illustrate situations where a significant degree of success in respect of sustainability has been obtained. All the four projects have put in substantial efforts in the six management aspects that have been examined in this study.

Interestingly, a few of these parameters can also be used to study the short-term success/failure of an e-Gov project. However, efforts have to be invested in these aspects in a consistent manner if the project has to sustain itself over a long time. One additional difference between evaluation of short-term success and that of long term sustainability is that in these cases we have not explicitly considered the achievement of initially stated objectives. Success of a project primarily needs the project to achieve its stated objectives while sustenance mainly refers to continuation of the project. Thus we have not considered, at least explicitly, achievement of stated objectives while evaluating sustainability performance of the above projects.

In the above cases, we also see that the specific manifestation of efforts on the six parameters differs from one project to another. For example, the specific measures taken to ensure trustworthiness or usability may differ in the case of Bhoomi from what NPI has done and so on. Thus, the specific initiatives taken by individual project managements have to be identified and evaluated considering the nature of the project under consideration.

Finally, this study can be further enriched in terms of its rigour and findings by considering a few additional parameters like, scalability, manpower support to end users, etc. Possibility of using the celebrated Technology Adoption Model (TAM) and its extensions can also be investigated into. These models may throw up additional valuable insights into the factors responsible for success/failure of e-Gov projects, in respect of sustainability. Another field of research which may be looked at in this light is the theory of Diffusion of Innovations. This field is particularly relevant for G2C projects. Thus, bringing in further insights from relevant fields is expected to result in a much richer and more rigorous framework for evaluating the sustainability of e-Governance projects.

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