

Egovernment: Lessons from Implementation in Developing Countries

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Abstract

E-government applications from a large number of developing countries are reviewed. Different models of electronic delivery of services are compared. Delivery through conveniently located service centers where citizens are served by operators working on-line seems to be emerging as a popular model in countries with low penetration of Internet. Various elements that constitute readiness in implementing e-government are identified. It is argued that trial through a few quick strike projects is important, as the benefits need to be demonstrated to citizens and civil servants. Such pilots also help in understanding the key step of reengineering processes and managing change in a local context. Based on the examples of successful implementations from different countries, the paper highlights critical success factors in building e-government applications. It also discusses various options available for orchestrating e-government on a countrywide scale from the vantage point of a nodal authority.

Departmental ownership of e-government projects is seen to be critical even when the agenda is being driven centrally. Strong project management skills are needed within the department. Project managers need to clearly identify goals and benefits in concrete terms. The task is often large, not manageable within the resources that are available internally to a Government department. Adoption of established standards and protocols can minimize customization. If off the shelf software is available, it should be used instead of reinventing the wheel. Systems analysis, which provides the necessary cues for reengineering, should be done internally. Design, software development, data preparation, training, etc. can be easily out-sourced. Building partnership with private sector is considered critical as the private sector has significant experience in developing IT applications.

1. Introduction

E-government is about a process of reform in the way Governments work, share information and deliver services to external and internal clients. Specifically, e-government harnesses information technologies (such as Wide Area Networks, the Internet, and mobile computing) to transform relations with citizens, businesses, and other arms of government. In government applications these technologies are deployed to serve a variety of objectives: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and cost reduction¹.

Specifically e-government can improve the performance of the Government in the following areas.

Delivery of services to citizens: Services can be made convenient, and easy to access Delays can be reduced. The rules governing service can be made transparent, and consistent across different branches of the same department, Many departments have been able to reduce corruption through e-government².

Delivery of Services to Business and Industry: Business and industry are concerned with the cost of setting up a business. A significant component of this cost is the administrative permissions and license that must be obtained to establish and operate a business. Electronic delivery can lead to quick turnaround of license applications and lead to an overall reduction in costs³. Additionally rules can be made transparent and consistent across departments. Corruption, which may form significant part of costs, can be reduced, making the business more competitive.

Increased Efficiency of Departments/ Govt. Enterprises: E-government may lead to lower cost of operations with the resulting higher productivity. Governments that do not feel responsible for providing large-scale employment and are willing to cut down the number of employees after the introduction of electronic delivery realize such a benefit.

The costs rarely come down in the medium term, as multiple channels of service delivery need to be operated. It takes time for citizens to move from traditional departmental channels offering services to electronic channels through the Internet.

Significant reduction in costs can result from a paperless environment in which electronic documents flow from workstation to work station for approval and action. There are one-time costs of hardware/software and other operating expenses associated with such applications. Perhaps the maximal cost reduction takes place in storing paper files. The most important advantage is one of greater effectiveness because the administrative burden on decision-makers is lessened, releasing time for important issues of policy and decision making.

Often the data captured by the electronic system enables tighter monitoring of productivity of employees, easy identification of pressure points for delay and corruption, and accumulation of historical data that can be easily mined for policy analysis. Another significant advantage is the ability to share data across agencies and departments in an electronic form.

2. Examples of E-government Applications from Developing Countries

The table below analyzes documented case studies of e-government applications from different developing countries. The table provides a list of applications which are popular under each of the four categories discussed earlier. The table lists the countries where such applications have been developed and identifies a few benefits that have been realized. These applications represent *the low hanging fruit*; applications that deliver significant benefit and yet are not difficult to implement.

It is interesting to note that the design of these applications is quite different from similar applications in the industrialized countries where the delivery model is based on self-service and delivery through the Internet. Often the design is a hybrid of automated and manual processes. For example, payment processes in most developing countries are not electronic (Chile, Brazil being exceptions). However the benefits delivered from these applications are substantial compared to the existing mode of delivery of these services, which is slow; involves several visits to Government departments; is often corrupt; and lacks consistency of rules and procedures. The quantum of improvement that will be realized in moving from these hybrid (intermediate state) solutions to a

fully automated self-service mode may not be very significant. Different models for delivering e-government are compared below.

Table-I: Some Examples of Successful Projects from Different Countries

Application	Examples	Benefits
1. Delivering Citizen services		
Payment of Property taxes, Issue of Land titles	CARD in AP at 230 locations, BHOOMI in rural areas in Karnataka at 189 locations	Transparency, quicker processing for citizens, less corruption , higher productivity for offices
Income Tax on-line	Singapore, Brazil, Jordan, Chile	Convenient, quicker refunds
Issue of Driving license, motor registration, passport, birth certificates, social security and collection of fines	Citizen Service Centre (Mobile and in-shopping Malls)Bahia, Brazil, FAST in Hyderabad, India	Cut delays, several services under one roof Less corruption Reduction of intermediaries
On-line issue/payment of electricity, phones, and water bills, and fines	E-Seva in Hyderabad, FRIENDS in Kerala	Convenient locations, quicker processing time, customer does many tasks in one visit
2. Delivery of services to Business and Industry		
E-procurement	Mexico, Philippines, Bulgaria, and Chile	-Reduce advertisement costs -Lower costs due to better prices -Transparency
New business registration	Jordan, Jamaica, China	-Cut down time and number of visits -Convenience on filing tax returns/quicker refunds
Tax collection (sales tax, VAT, and corporate Income tax)	Gujarat check post Singapore and Chile	-Cut down time and number of visits -Convenience on filing tax returns/quicker refunds Increase in revenue collection for Government
Customs on-line	India, Philippines, Mauritius and Jamaica	Quicker clearance, less corruption
Trade facilitation	Dubai, Singapore and Mauritius	Quick turnaround of ships in ports
Municipal services	OPEN Seoul Municipality VOICE Vijaywada, India	Quick permissions and issue of licenses Access and permissions
Application	Examples	Benefits
3. Electronic Communication and document processing in Government		
Use of email and video conferencing	Andhra Pradesh	Faster communication, less travel
Document management and work flow for paperless operations	SKIMS project in AP	Speed of processing, traceably of actions, greater accountability
Knowledge management		Better and consistent decisions
ERP for administrative processes/approvals Decision support systems		Quicker processing, Improved operational control, better utilization of resources
4. Empowering Citizens through Access to Information		
Publishing budgets central and municipal level	Argentina, India and Turkey	Greater transparency
Publishing project-wise	Panchayat web sites in Karnataka	Transparency and lower corruption

expenditure, executing agency		
Publishing citizen's charter for delivery of services	Canada, UK	Greater accountability
Publishing comparative data on school performance	UK	Greater accountability
Publishing information on vocation and economic activity useful to communities in a format understood by them	Gyandoot in MP, Swaminathan Foundation in Pondichery, Kothamale in Sri Lanka	Knowledge of market prices

3. Different Models for Electronic Service Delivery

Departments going on-line: This is the first stage of on-line service delivery particularly when the earlier system is largely manual. Here citizens interact with departmental/private operator who access data and information from on-line terminals located in the premises of the department. If care has been taken to reengineer the back end processes, significant benefits can be delivered in terms of time, costs, and number of trips to the department. Such a model tends to result in greater departmental ownership enabling significant re-engineering of processes. Even though each department becomes more efficient, for availing different services citizens need to visit a different departments.

Another model which is becoming popular in countries with low access to internet is the use of conveniently located Service Centers in public places which offer a variety of Government service under one roof. Counters at these service centers are manned by public/private agencies. Multiple services are offered at each location: payment, issue of licenses and certificates. Such counters can quickly move traffic from departmental counters to service centers (as happened in the case of Brazil⁴). Building such centers, which must deal with several departments, requires significant coordination and perhaps setting up a separate agency for the project. Services from municipal, state and federal governments can be offered under one roof. Many countries have outsourced the running of these centers to private operators who add other value-added services like payment of insurance to augment their income⁵.

Self Service through a Portal: The portals are designed to offer a variety of services and the interface is organized in a fashion that makes it convenient for citizens to access the services (using a life cycle approach as in UK and Singapore⁶). Complete backend computerization is needed and usually there is a middle ware, which directs requests for access to information from different departmental data bases/web sites. Integration at the back end is needed for data sharing. There should be policies governing data definitions, structure of data and layered architecture of individual departmental applications. Such self-service delivery naturally presumes a high Internet penetration; willingness and ability of citizen to use the Portals. This in turn requires security and mutual trust (which builds with each successful outcome). As many countries have experienced usage builds up gradually. Canada had 11% people using the Portal in 2002 even though 60% citizens have access to Internet. Adoption rate has to be driven through conscious actions like training and other incentives. Building a portal requires strong centralized leadership for extensive co-ordination. Even then the goal of a joined up Government where a particular service requires approvals from many different departments, is difficult to achieve.

4. Measuring the Readiness for E-government in a Country

One of the key questions that countries grapple with is the timing of their readiness for implementing e-government. Some agencies like McConnel⁷ have developed methods for assessing e-government readiness but these methodologies are useful for comparing different countries rather than to provide a guideline to a country in terms of timing or areas of improvements. Readiness depends on maturity of technical infrastructure and back office use in various departments. For example, use of email across Government departments, would be indicative of readiness. Readiness also depends on the attitudinal make up of the civil service. Willingness to reengineer, share more information, and treat the citizen as a customer indicates high readiness. Attitudinal changes are difficult to bring about, unless there is a champion at the political level and strong leadership within the department.

Delivering e-government services requires a high penetration of Internet in homes or presence of a large number of public kiosks. For handling e-payment and building trust between citizens and government in doing transactions over long distance requires an enabling legal framework.

No government is completely ready on all the above dimensions. Some governments therefore hesitate to make a beginning. Experience of some countries like Mauritius, Jordan suggests that organization and coordination can be overemphasized at the expense of action in implementation⁸. This lack of balance between planning and action can result in demoralization amongst the champions. Trial is important. As many consultants advise, "Think BIG, start SMALL, move gradually through stages" is an approach worth pursuing. E-government can be built in stages after a big picture is in place. First, on-line service delivery is provided within a set of chosen departments. Later many of these services are delivered on-line, under one roof, at conveniently located centers. Then all the services are web enabled and offered through a single portal. Building e-government through these stages requires a great deal of coordination amongst departments. Ministerial level co-ordination committees need to be formed. Managing expectations and maintaining credibility is important.

Departmental champions need to be identified and co-ordination committees created at departmental levels. A final aspect of readiness is an aware and demanding citizenry, which understands its rights, is willing to express them and to fight for them in case of laxity and inefficiency. By publishing performance data and citizen charters, e-government can be an instrument in promoting citizen awareness.

5. Orchestrating E-government: Questions for which Countries Seek Answers

The question has two elements: What makes an individual project successful? And, how can a national effort be orchestrated?

In the western world where e-government implies the creation of an Internet channel for delivery of services, it is possible to conceive of a centralized strategy to coordinate the interdepartmental effort (particularly the joined up aspect of the Government)⁹. For most developing countries, which are starting from a low base (many departments still process all steps of a service delivery manually) the task is too large to handle through a centrally driven strategy. However there are countries such as Jordan, Singapore, Dubai, Mauritius, which because of their small size can operationalize a centrally driven strategy. Many countries, which recognize the potential benefits from e-government, are now

grappling with the question of which is the right approach: centrally driven versus departmental initiative?

An associated concern is the size of budget allocations for a centrally driven effort. For example the Canadian initiative, which is centrally driven from the office of the treasury has already spent C\$ 280 million on government on-line projects by 2002 and expects to spend C\$ 600 million by 2005. In the US, the Office of Management and Budgets which is responsible for the joined up Government initiative had a proposed budget of \$ 20 million in 2002 and \$ 100 million over 3 years (2002-2005)¹⁰.

For countries where a central support agency needs to be created, the role, mandate, and size of the central support agency needs to be defined. Its appropriate home has to be established. Some of the tasks to be performed by a central agency are: assessing and enhancing preparedness; developing a strategy, implementation plan; building shared infrastructure; finding resources for re-engineering, application development and change management, developing guidelines, standards and best practices, developing public private partnership, identifying departmental champions, monitoring progress and impact, and overseeing a few quick strike projects.

6. Building Successful E-government Applications

Significant Process Reengineering Required: For successful reforms the existing methods and procedures need to be mapped. Often, different branches of the same department do not use the same procedures as local context and conditions result in variations being introduced over time. An important aspect of initiating e-government is to document the existing procedures, simplify them in a manner that task can be completed in as few steps as possible without compromising on the basic purposes. Often, the tasks are carried out in a mechanical fashion because with time, the original purpose of carrying out these tasks has been lost or forgotten. This entire process of simplification of documents and workflow, points of approval and audit is termed as reengineering. Most of the e-government applications which have proved to be successful in reducing total processing time, and curtailing costs, have done so through a substantial reengineering of their processes. Such reengineering must precede any exercise in automation.

The end result of reengineering may be to modify processes resulting in fewer steps and fewer people to perform the tasks. It means that the way the civil servants were working earlier needs to be modified. Introduction of technology also means changes in the way work is done. All this produces a considerable resistance from the lower levels of civil servants. A great challenge in implementing e-government is to overcome this resistance through education and training. E-government projects have to consciously strive to provide benefits to civil servants at this level, as they are the ones that tend to lose power and authority over citizens when electronic delivery of service is introduced. E-government projects need to focus on making the entire process of decisions making more transparent. Because of automation, the workflow is regulated and often civil servants lose the flexibility to deal with applications in any sequence other than the one dictated by the computerized workflow. This takes away the power of patronage and inability to expedite work. On the other hand, inability to stall work can be noticed easily because both the public and the supervisors now have the capacity to track information and application as they move from work station to work station.

Successful implementation of projects requires that there is a clear focus on the purpose for which the application is being built. The intended beneficiaries of the application are identified and benefits that will accrue to the stakeholders are concretized. In fact, specific benefits like reduction in time or number of trips to an office need to be targeted and made public. It is only then that the process of reengineering can work towards an ultimate goal.

Strong Project Management skills are needed within the department. Project managers need to clearly identify goals and benefits in concrete terms. The task is often vast, not manageable within the resources that are available internally to a Government department. Adoption of established standards and protocols can minimize customization. If of-the-shelf software is available it should be used instead of reinventing the wheel¹¹. Systems analysis, which provides the necessary cues for reengineering, should be done internally. Design, software development, data preparation, training, etc. can be easily outsourced.

Training expenses should not be minimized. Successful projects typically spend about 10% of the budget on training¹². Awareness about benefits of Egovernment has to be created in senior civil servants and political executives. Training is required for Project leaders who need to define project deliverables, deal (negotiate) with consultants and vendors, and manage an outsourced development process. Clerical staff need to be trained on specific applications. Supervisors and managers need to be trained on using information. Citizens need to be made aware of on-line services and how to transact business on Portals

Partnership with private sector can be useful as the private sector has significant experience in developing IT applications. Several types of partnership arrangements can be used. For smaller countries it may be possible to find a single partner for the entire effort (not just a specific project) for developing a strategy, producing guidelines for design, reengineer processes, developing software, helping in procurement and providing training. Otherwise multiple partners may be used for different tasks. The choice of partners can vary from multi national management consultants, IT vendors, and local companies. The task for partners can be defined in many ways. Partners may be asked to build; or to build and operate; or to build operate and transfer. Whatever the partnering arrangement, it must lead to building of local capacity. If private sector partners are involved, contracts should be drawn in a way that is fair and equitable for both parties—the Government and the private sector. The private sector is entitled to reasonable profits.

Electronic government does not mean that all the steps in the delivery of a service should be handled electronically. Significant benefits can be derived by handling a few of the critical components electronically, e.g. in Chile the e-procurement system announces the requirements of the government on a web site, but handles the bids in a manual mode. However, registered suppliers for the needed product/service are sent an email to broaden the choice of suppliers. Once the bids have been processed manually, the results are announced electronically on a web site. Significant costs have been saved in Chile because of expanded supplier choice and making the whole process of selection of suppliers more transparent. Yet the core process of bidding continues to be manual¹³. There are many examples where some components of an electronic service delivery continue to be handled manually¹⁴. Yet, in all these examples significant benefits have been delivered to the users in terms of reduced time and less corruption.

Departmental ownership of e-government is vital because no external agency can drive the kind of change that is needed in implementing e-government. However, if the implementation of e-government is left entirely to a department, then resources get wasted, and data sharing may be hampered. This would make it difficult to deliver those services where a large amount of documents and data must be shared across departments in the delivery of a service such as licensing for a beach hotel. Also, each and every department may not have the capacity to use the correct method and latest design techniques in developing the application. E-government effort should therefore be supported by a central agency, which can provide necessary guidance in use of correct methodology. It can also build and maintain common services that are required to be used by different departments.

7. Measuring Progress of E-government Projects

E-Government can advance the agenda on Governance and fiscal reform, transparency, anti-corruption, empowerment and poverty reduction. The potential is recognized but implementation is difficult. Pioneers in several countries have shown that gains can be real and projects can be implemented successfully. The challenge is to promote widespread use. So far the benefits of e-government have been largely anecdotal. Systematic evaluation studies need to be conducted to measure benefits during and after implementation. Such studies should be carried out by independent agencies. Stakeholders must indicate the benefits that have been delivered and problems that continue to be faced.

Some of the projects that were deemed to be successful (and were awarded prizes by international organizations) have started faltering. A World Bank sponsored evaluation of four projects in India indicates that two projects are moving towards a failure¹⁵. Long term sustainability can be ensured if the innovation is not championed by just one individual administrator but is owned by the entire department. The design must ensure that the reengineered processes are automated as completely as possible so that there is no turning back by recalcitrant civil servants. The gatekeeper role that clerical staff play in processing applications for licenses and permits by citizens has to be minimized so as to not to provide rent seeking opportunities. Serious evaluations can provide feedback for a national strategy, as well as design and implementation of individual projects. Evaluation also indicates whether a project has been celebrated prematurely.

¹ For a comprehensive definition of e-government and examples of cases where these benefits were delivered, see World Bank web site on e-government <http://www1.worldbank.org/publicsector/egov>.

² See OPEN case study in Seoul where corruption has been lessened in issue of licenses by municipal corporation by enabling on-line tracking of application status combined with several other measures. <http://www1.worldbank.org/publicsector/egov/seoulcs.htm> Also BHOOMI case in Karnataka, India illustrates reduction in corruption in issue of certificate of land titles to millions of farmers http://www1.worldbank.org/publicsector/egov/bhoomi_cs.htm.

³ See the examples of business registration in China http://www1.worldbank.org/publicsector/egov/zhongguancun_cs.htm where the processing time has been cut significantly

⁴ For a detailed description of experience with service center locations in Bahia and Sao Paulo in Brazil see <http://www1.worldbank.org/publicsector/egov/bahiaSAC.htm> and <http://www1.worldbank.org/publicsector/egov/poupatempo.htm>

⁵ For a detailed description of private operators running service centers in Andhra Pradesh, see the description of e-seva centers at 14 location in the city of Hyderabad, India <http://www.ap-it.com/eseva.html>

⁶ The government online portal of UK is organized so that a citizen can access services in multiple ways. One of these ways is: issues beginning with before the birth of a new child, after the birth of a child, nursery education, lone parents, just for dads, adopting and fostering etc. In case of Singapore services and information are categorized into 15 etowns which cater to various essential touch-points in life - Business, Defense, Education, Elections, Employment, Family, Health, Housing, Library, Recreation, Safety & Security, Sports, Transport and Travel. For details see www.ukonline.gov.uk and www.ecitizen.gov.sg

⁷ For details of the survey instrument and results of comparison of readiness across countries see www.infodev.org/ereadiness/methodology.htm and www.bridges.org/ereadiness/compare.html

⁸ This observation is based on e-government mission work carried out in these countries by the author on behalf of the World Bank and the Commonwealth Secretariat.

⁹ For example, Canada, U.K., Australia have all announced a time-bound program for delivering all the government services through an online portal. The Canadian portal states: The Government of Canada is committed to being the government most connected to its citizens, with Canadians able to access all government information and services on-line by 2004. These programs are driven by a central agency.

¹⁰ Please a report on the Canadian vision presented at a workshop at the World Bank
<<http://www1.worldbank.org/publicsector/egov/fromvision.pdf>>

¹¹ For example, many countries have implemented software called ASYCUDA developed by UNCTAD for implementing online customs clearance. www.asycuda.org/default.asp

¹² The case study on Computer Aided Registration of Deeds (CARDS) on the World Bank web site provides details of expenditure on various facets of implementation. www1.worldbank.org/publicsector/egov/cards.htm

¹³ For more details on the Chilean e-procurement system and the site operated by a private sector company, please see http://www1.worldbank.org/publicsector/egov/eprocurement_chile.htm.

¹⁴ For most of the applications documented by the World Bank site, payment is made in the traditional manner. For example, radio frequency auction in Canada and US are done on line in a multi-staged process, but the final payment by the successful bidder still comes in as a check www1.worldbank.org/publicsector/egov

¹⁵ See the evaluation reports at <http://www1.worldbank.org/publicsector/bnpp/gksp1.htm>