The Economic and Social Impact of E-government

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The Economic and Social Impact of E-government

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Documented research on the social or economic impact of E-Government initiatives is virtually non-existent. Currently available information is largely anecdotal. The report catalogues the social and economic impact based on a compilation of various examples of e-government applications from different countries. Some of these examples have been written about in the popular press. Others are cited at the web sites of large application developers. The main source of the analysis reported here is the documentation of case studies carried out by the Public Sector Group at the World Bank. Another source that carries brief case studies is the IDPM web site of Manchester University. Four detailed cost benefit evaluations of Indian projects carried out by the Global Knowledge Sharing Program of the World Bank have also been used as a significant resource for the analysis. Ten of these cases (drawn from 6 countries) that have demonstrated successful impact have been abstracted into a 1-2 page write up and are included in the last section of this report. It is worth noting that documented case studies often highlight success stories. There may be a significant number of failed projects amongst the applications that have not been documented.

1. E-government Definition and Scope

The term e-government is understood differently across the world. This section describes the essential features of an e-government application that distinguish it from other applications of ICT within Government.

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. These technologies can serve a variety of different ends: 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/or cost reductions.

E-Government applications normally evolve through a four-stage process. The first stage includes the publication of information on a website for citizens seek knowledge about procedures governing the delivery of different services. The second stage involves interactivity. Clients can download applications for receiving services. The third stage involves electronic delivery of documents. The fourth stage involves electronic delivery of services where more than one department may be involved in processing a service request or service. Models with public private partnerships are offered such as health exchanges.

Another staged process through which E-Government systems evolve is the point of contact with the client. Many countries begin with on-line delivery at departmental counters and then move to conveniently located multi-service centers and/or through an Internet Portal.
2. Status Of E-Government In Developing Countries

Assessments made by large consulting companies indicates that e-government is in a nascent stage of implementation in both developed and developing countries.

In many developing countries, a very large number of Government departments publish information on Web sites. By and large these sites are poorly designed, not kept updated, and do not own responsibility for the quality of information. Initially this effort was targeted at attracting foreign investments, but as internet penetration grows in urban areas, many sites focus on delivering information and services to citizens and businesses. A review of documented case studies from developing countries suggests that a large number of developing countries from Asia and Latin America have implemented transaction oriented egovernment applications on a pilot basis. A few of these pilots in Chile, India, Brazil, South Korea have been replicated on a wider scale.

The table below analyzes documented case studies of egovernment applications from different developing countries. 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. This table is used as a basis for further analysis to understand the purpose for which egovernment applications have been built, types of applications that have been developed and different delivery models that have been used.

INSERT TABLE 1 HERE

2.1 Classifying Applications According to the Types of Clients Served

The table provides a list of applications, which are popular under four broad categories: service delivery to citizens, service delivery to business, citizen empowerment, and more efficient government.

Service Delivery to citizens: The largest number of applications have been built for service delivery to citizens. A number of states in India and countries in Latin America have implemented on-line delivery systems for municipal licenses, transport permits, property registration and tax collection. Departments with regulatory functions have been quick to embrace E-Government, while developmental departments such as education and health have been slow. One of the reasons may be that the informational content for regulatory services is large making them more amenable to electronic delivery. On the other hand services like health involve information as well as materials like vaccines, medicines, contraceptives that need to be delivered physically. There is a large urban/rural ICT divide which forces governments to adopt creative approaches to delivering services over ICT channels to communities with uneven access to ICT networks.

Citizens have benefited from reduced delays, availability of many services under one roof, avoiding frequent visits to Government departments, and reduced corruption. By publishing information (rules and procedures) online, transparency has been increased. Since the poor bear the largest costs of administrative inefficiency and corruption, project that deliver services
through rural kiosks (Bhoomi in Karnataka, Gyandoot in MP, India) lead to economic and social empowerment of the poor.

**Service Delivery to Business:** Tax collection, customs, and e-procurement have been popular and quickly embraced because they create more efficient means to collect revenue – this is critical for governments that are cash constrained and cannot enforce payment. Businesses also are quick to use these services because they are provided with an easier, hassle free channel to interact with government. Intermediaries can also be eliminated. Investments can be made as pay back is quick through increased collection.

Businesses are often burdened with significant administrative roadblocks when interacting with government. Electronic delivery can reduce the turnaround of license applications from several weeks to a few days. Rules can be made transparent and consistent across departments. The elimination of intermediaries can reduce the need for bribes, freeing up resources that can be used to increase competitiveness. A number of countries have implemented on-line business registration, filing of corporate tax and clearance of traded goods through customs that have reduced the time and costs for businesses and government in processing taxes and have lessened corruption.

**Increased Efficiency Within Government:** E-Government can lead to higher productivity. Governments can reduce the number of employees or re-deploy them in more productive tasks. 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. Data can easily be shared across agencies and departments in an electronic form. Costs rarely decrease 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 to electronic channels.

Significant reduction in costs (cost of paper, storage space and processing time) can result from a paperless environment in which electronic documents flow across workstations for approval and action (Smart Government in AP India). There are one-time costs of hardware/software and other operating expenses associated with such applications. Reduction in the administrative burden of decision-makers is a very significant benefit as it releases time for important issues of policy and decision making. Very few of these types of applications which focus entirely on internal efficiency have been built, primarily because these are difficult to implement as they encounter resistance from well entrenched civil service. However, applications for service delivery to citizens and businesses also lead to some internal efficiencies.

### 2.2 What Goals Does E-government Serve

The overarching goal for many progressive governments is to augment basic democratic principles like citizen participation, fundamentally altering the contours of democracy and how citizens interact with the Government. Other countries that have an advanced ICT infrastructure invest in e-government because they are faced with a population that expects government to provide services at the same rate of efficiency and speed that is offered by the private sector. Governments want citizens to move towards self-service to save costs and time for both citizens
and government. These Governments are involving their citizens in deciding the kind of services they should be offering and the platforms through which these can be delivered.

However, e-government has evolved differently in the developing world. The purpose for which e-government is implemented in developing countries is different from the advanced economies. The actual experience of what has been implemented is therefore also somewhat different. Many developing countries view egovernment as a means to further their economic goals such as promoting industry and attracting investments. Such countries tend to focus on the reform of their public sector, particularly the arms of government that deal with the private sector. That is why registration of new business, customs, and tax collection applications are emphasized.

E-Government is pushed by states/countries where it is seen to be a facilitator of the broader goals defined by the political leadership. For example in India alleviation of poverty is an important goal and therefore many applications that deliver services on-line in rural areas are being tried out in spite of numerous infrastructure constraints. These applications have an effect on empowerment, poverty reduction and improving government responsiveness to poor communities who have had little prior access to public services. Bhoomi, in Karnataka state in India is a striking example where land titles are delivered on-line to millions of farmers in 15 minutes instead of earlier practice where bribes had to be paid and it took weeks to obtain a land title. In other cases, knowledge relevant for economic activities is being delivered to communities in local languages through rural Internet kiosks.

In Latin America, corruption has been a key public issue and therefore e-procurement and transparency in public spending have been emphasized. A number of E-Government projects in other countries have also focused on reduction of administrative corruption and increase in transparency. E-Government can have a direct impact on 1) reducing the number of intermediaries that citizens need to interact with in order to get a government service, 2) improving government ability to monitor transactions (OPEN in Seoul\textsuperscript{vii}), and 3) disclosing information about government processes and public budget spending to citizens (CRISTAL in Argentina\textsuperscript{viii}). Increasingly, governments would like to use E-Government as a tool to enhance transparency and reduce corruption, although this goal is some times not stated publicly as it may create resistance within the civil service.

Civil Service Reform is a goal emphasized by some multi lateral agencies, although the success in achieving the goal has been limited. E-Government could have a transformational impact on internal administrative procedures. These changes have profound effect on the working methods of government employees. E-Government can change the following: decision making, decentralization of power, inter and intra departmental communication, monitoring of employee performances, transparency of transactions, and citizen and government interaction.

### 2.3 Practices in Analysis, Design and Implementation

Whereas some of the Governments have re-engineered administrative processes, others are more interested in appearing to be modernizing, making only half hearted attempts to reform government functioning. As is evident from many of the detailed case studies presented later, the extent of reengineering in most of the applications has been quite limited.
It is interesting to note that the design of egovernment applications is quite different from similar applications in industrialized countries where the delivery model is based on self-service 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 and Brazil being exceptions). Payments are still handled by traditional means of cash, check and credit cards. In fact in many developing countries credit cards are not used by a majority of citizens. Most countries have therefore not implemented an electronic payment gateway.

The benefits delivered from such hybrid applications are substantial compared to traditional methods of service delivery. Benefits of moving from these hybrid solutions to a fully automated self-service mode may not be commensurate with the additional investments that are needed.

The task of integration across departments has been particularly difficult. As a result, applications that involve a few departments and deliver a specific service to a limited constituency have had the most impact. Consequently, local governments have shown the maximum potential.

Surprisingly, in the early applications, privacy and security have not been major issues for citizens in the developing world. Governments are now recognizing the need for authenticating users (particularly in highly distributed environments). Security over networks is becoming an issue and the need for a certification authority is being felt.

2.4 Reasons for Adoption of E-Government by Developing Countries

In the last couple of decades organizations have tended to ride over several management movements like management by objectives, zero-based budgeting, decentralization, right sizing, reinventing government to bring in incremental change but almost all of these movements have failed to deliver on their full promise. Would E-Government turn out to be yet another buzz word or can it truly transform Governments in their dealing with different stake holders? Perhaps E-government is different. It is driven by vendor/consultant push who stand to benefit from increased investments in hardware and consulting but is also driven by a growing demand for better services from citizens, who now experience vastly improved services from the private sector. Motivation to adopt is therefore strong, as the benefits of a changed way of doing things accrues to all stake holders-citizens, businesses, and Government employees. Some of the factors that have contributed to the growing popularity of E-Government within developing countries are:

There has been a considerable demonstration effect of the constructive difference that egovernment has made in advanced economies in the delivery of services, provision of information and internal administration of the public sector. Many developing countries that have developed significant capacity in building IT applications feel that they can leap frog to take advantage of the new electronic channels that are available for delivering government services.

Aggressive Marketing by IT vendors: Most large IT vendors have established a significant presence in emerging markets in Asia and Latin America. Spending on ICT by Governments has lagged behind that of the private sector. IT vendors have been conscious of this fact and have
created specific initiatives on E-Government to open up the market. With the recent slow down in the US economy, these IT have vendors are likely to become even more aggressive in their marketing pitch to Governments in developing countries.

Citizens in developing countries are also experiencing a significant improvement in service levels in e-commerce, \textit{vis à vis} the private sector. They feel that if the private sector can make systematic improvements in service delivery, why can’t the government use the same technologies? So, the citizens in some countries are, in fact, asking the government to go online.

In the last decade, many countries have gone through a process of economic liberalization and economic growth under advise from multi-lateral lending agencies. Many large countries like India and China have grown at 6 to 10 percent over the last decade. Having completed the first phase of economic policy reform, such countries are now under compulsion to move to the next phase of reform i.e. governance reform. Since e-government pilots have demonstrated a positive impact on corruption, transparency and quality of service, egovernment is seen as an effective tool for governance reform by these countries.

There is significant intra-governmental competition between government departments that are eager to move forward in implementing E-Government.

These successes are also a source of pride. Some countries have already demonstrated, the best consequence of their experimentation and innovation in this field, there is a competition taking place with developed countries. So, for example, Brazil launched an electronic voting system: they are very proud that it is a better system than that of the United States, and it seems this has become an incentive for these countries to catch up with the developed world.

Motivation is expansion of service and not cost reduction. Initial fears that ICT use in Government will lead to unemployment is turning out to be unfounded. To date, increased efficiency through e-government has not led to unemployment in developing countries.

Spread of the Internet in the urban areas of many developing countries is starting to create a critical mass, not as considerable as in most developed countries, but large enough to lead the government to deliver online services. In the large and highly urbanized countries in Latin America or Asia, it has become possible to deliver these services. In some places where e-government has been introduced, it has shown that it can work, and it can have a wide impact on government efficiency and effectiveness.

### 2.5 Different Models for Electronic Service Delivery

Another staged process through which E-Government systems evolve is the point of contact with the client. Many countries begin with on-line delivery at departmental counters and then move to conveniently located multi-service centers and/or through an Internet Portal.

The first stage of on-line service delivery occurs when departments provide services and information online. Citizens interact with a public or private operator who accesses data and information from on-line terminals located in the premises of the department. If back end processes are re-engineered, citizens can experience significant benefits in terms of time, costs,
and number of trips made. This model tends to result in greater departmental ownership -- facilitating re-engineering of processes.

A second model which is becoming popular in countries with internet penetration is the use of conveniently located Service Centers in public places. Counters at these service centers are manned by public/private agencies. Multiple services are offered at each location. Such counters can quickly move traffic from departmental counters to service centers. Building these centers requires coordination between different departments. 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 such as payment of insurance to augment their income.

Citizen Self Service through portals are popular models in countries where Internet penetration and skills are high. The portals offer a variety of services and the interface is organized conveniently for citizens to access services. Complete backend computerization is needed. This model requires investment in security and building of mutual trust. Many countries have seen a gradual build up of usage, even in countries like Canada where currently 11% of citizens use the Portal even though 60% of citizens have access to Internet. Adoption rate has to be driven through training and awareness raising. Building a portal requires strong centralized leadership to facilitate and encourage inter-departmental coordination. Even through inter-departmental portals, self service is often difficult to achieve, particularly when the service requires approvals from many different departments.

3. Analysis of Social and Economic Impact

The scope of e-government as it is implemented today is not wide enough to have generated a macro level impact which is discernible through studies of macro indicators. Investments in e-government are relatively small to have created such a macro impact.

Table 1 had presented a number of applications that have demonstrated a variety of economic impacts both direct and indirect, and short term and long term. The following types of economic impacts have been demonstrated: increase in revenue collections in government, increasing attractiveness for investors, improving service delivery to business, improving transparency and reducing costs in government procurement, and improved financial management in Government.

This Table also catalogued applications that have demonstrated a social impact in different countries. The following types of social impact has been demonstrated: poverty alleviation, empowerment of citizens, increased transparency, and lowered corruption in service delivery.

Ten of the applications that demonstrate a social or economic impact have been included as a one page case study in this report in section 5. These cases will help the reader to understand the context of the application.

The table below conceptualizes how E-Government applications help in achieving the social and economic impacts. Remaining part of this section then analyzes the What and How of economic and social impact of E-Government on the basis of the ten applications presented as case studies in this report.
### How Can E-Government Create Social and Economic Impact?

<table>
<thead>
<tr>
<th>Social Impact Goals</th>
<th>How E-Government Can Help?</th>
</tr>
</thead>
</table>
| **Increasing Transparency**         | 1. Dissemination of Government rules and procedures, citizen’s charter, government performance to a wider audience  
                                         2. Disclosure of public assets, government budget, and procurement information  
                                         3. Making decisions and actions of civil servants transparent |
| **Reducing Administrative Corruption** | 1. Putting procedures online so that transactions can be easily monitored  
                                         2. Reduce the gatekeeper role of civil servants through automated procedures that reduce discretionary powers  
                                         3. Eliminate the need for intermediaries |
| **Improving Service Delivery**      | 1. Less time in completing transactions  
                                         2. Reduce costs associated with travel for citizens to interact with government  
                                         3. Improve government ability to deliver service to larger segment of population |
| **Empowerment**                     | 1. Provide unserved communities (limited access to government) with a new channel to receive government services and information  
                                         2. Reduce the brokerage power of intermediaries |
| **Economic Impact Goals**           |                                                                                           |
| **Streamlining administrative process** | 1. Increase ability of managers to monitor task completion rates of civil servants  
                                         2. Improve efficiency of civil servants by automating tedious work  
                                         3. Integration of databases, reducing inaccuracies caused by the presence of redundant, duplicate databases  
                                         4. Increase speed and efficiency of inter-and intra-agency workflow and data exchange |
| **Reducing Administrative Burdens for businesses** | 1. Faster access to government and less time needed to interact with government.  
                                         2. Reduction of interlocutors between government and individual. |
| **Increasing Revenue**              | 1. Make it convenient to pay taxes  
                                         2. Improved audit to identify defaulters  
                                         3. Plug leakage by reducing corruption |
| **Cost Reduction and Budget Savings** | 1. Reduce Cost of transactions for government processes  
                                         2. Provide Better Control of Expenditure |
3.1 Major Social Impact

Increased Transparency and Reduced Corruption

Although few governments have explicitly stated transparency as a goal, some transparency gains have been achieved through e-applications.

The Cristal website in Argentina published information about public funds distribution, information on national policies and controlling corruption. The website received favorable attention in the press and enabled transparency. While there has been initial success, Cristal has had difficulty operationally because of the lack of compliance by departments to submit and disseminate information in a timely manner to Cristal project managers.

In Korea, the Seoul government created the OPEN system to target corruption in the processing of permits and licenses online. The system publishes information related to services, permits and licenses issues by the local government. The system allowed the public to track the process from beginning to end. The success of the system is attributed to the commitment from the Mayor, who led the initiative. Another success factor was the re-engineering, greater access to information, improved communication with citizens, which led to greater transparency overall.

In the case of CARD—the land property registration system in AP, reducing corruption was deliberately never a stated goal of the project because it was feared any project with explicit goal to curb corruption would encounter greater resistance from employees. In AP’s case, corruption was reduced as a result of reducing the number of intermediaries.

The Central Vigilance Commission in India, a government agency designed to monitor corruption, created a website that publishes the names of officers from the elite administration and revenue services against whom investigation have been ordered. The website received a lot of attention because the press used the information to highlight corruption cases to a national audience. While there are concerns that public officials may be smeared wrongly through the website, the tool has had a big impact in highlighting corruption.

The table below presents a framework for classifying different types of information that can be made transparent through e-government applications and the resulting impact on corruption. It also lists examples from the compendium of cases carried in this report.

<table>
<thead>
<tr>
<th>Type of Information being made transparent</th>
<th>Resulting impact on corruption</th>
<th>Illustrations of Egovernment applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rules and procedure governing services; public officials responsible for different tasks; citizen’s charter</td>
<td>Leads to standardized procedures for delivery of service. Citizens can resist attempts to delay processing. Reduces arbitrariness eg demand for additional documents</td>
<td>Web sites of Government departments in many countries.</td>
</tr>
<tr>
<td>Enhancing citizen’s exposure</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Information about decisions and actions of government functionaries: outcome and process eg award of contracts and license, allocation of resources.

Data about individual entities in Government records such as land records, comments on application for license, bill of entry for goods, status of tax payments.

Information on performance of economy: Statistical employment, income, trade etc

Performance indicator for Government departments

Names of citizens with large outstanding loans, taxes; names of civil servants under investigation or convicted, index of corruption, performance of investigating agencies.

Disclosure of assets, income, profile of election candidates, elected representatives, ministers and civil servants

<table>
<thead>
<tr>
<th>Impact on Corruption</th>
<th>Examples from Around the World</th>
<th>How did E-Government Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction Of Bribes</td>
<td>OPEN: Seoul's Anticorruption Project</td>
<td>Ability to track the processing of an application for service (those that are not delivered across the counter) by citizens has increased transparency. Supervisors can also track unusual behavior. Collect citizen feedback on corruption</td>
</tr>
</tbody>
</table>

The table below traces the impact on corruption through a reduction in bribes demanded in service delivery, reduction in the role of brokers, increased accountability resulting from greater transparency and building greater awareness about anti-corruption programs. It cites examples from the compendium of cases which achieve these impacts and explains the reasons why the impact is achieved.

**Combating Corruption through E-Government**
<table>
<thead>
<tr>
<th>Impact on Corruption</th>
<th>Examples from Around the World</th>
<th>How did E-Government Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corruption</td>
<td>Philippine Customs Reform&lt;sup&gt;xii&lt;/sup&gt; in Karnataka, India</td>
<td>Remove face to face contact of Inspectors and cargo agents by introducing electronic submission</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Taking away discretion to delay or deny by automating the process</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Keeping a traceable electronic record of transaction reduces the opportunity for corrupt practices and increases accountability of public officials.</td>
</tr>
<tr>
<td>Reduction of Powerful Brokers</td>
<td>CARD in AP, Department of Transport in India</td>
<td>Make procedures simple and transparent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduce processing time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remove gate keeping role</td>
</tr>
<tr>
<td>Raising Public Awareness</td>
<td>Central Vigilance Commission Website in India, Cristal: in Argentina</td>
<td>Publishing names of corrupt</td>
</tr>
<tr>
<td></td>
<td>e-Procurement in Chile&lt;sup&gt;xiii&lt;/sup&gt;, Mexico&lt;sup&gt;xiv&lt;/sup&gt;, Brazil</td>
<td>Publishing performance of prosecuting agencies</td>
</tr>
<tr>
<td></td>
<td>Teacher’s Transfer in Karnataka&lt;sup&gt;xv&lt;/sup&gt;</td>
<td>Publishing details of budget and expenditure at a disaggregate level</td>
</tr>
<tr>
<td>Transparency and Accountability</td>
<td></td>
<td>Making decisions of selecting a supplier transparent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Citizens can analyze public procurement-quantity and prices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>More competition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Transparent rules for prioritizing requests.</td>
</tr>
</tbody>
</table>

These case studies illustrate the following ways in which E-Government applications reduce corruption in the public sector:

- Introduce transparency in data, decisions/actions, rules, procedures and performance of Government agencies.
- Automates processes to take away discretion from civil servants to delay and deny a service.
- Provide a convenient entry point for simplification of rules and reengineering processes. Almost all applications have done partial reengineering.
- Make decisions traceable- so that action can be taken in case of a complaint.
- Builds accountability by providing greater access to information through web publishing to civil society groups.
- Provides documentation to citizens for follow up action in case they wish to file a complaint.
- Modularizes tasks making outsourcing possible
- Introduces competition amongst electronic delivery channels and departmental counters that provide a service.
- Standardization of comments/objections on petitions and applications of citizens leads to effective supervision.
- Centralizes data becomes available for better audit and analysis. This feature is being used effectively by e-tax applications. Integration of data across applications provides improved intelligence. Enables unbiased sampling for audit purposes.

**Increasing Efficiency and Effectiveness of Service Delivery**

Many projects have boasted impressive efficiency gains in terms of cutting the number of steps involved, cutting the timeframe, and reducing the number of agencies that need to be consulted. These gains have been achieved because processes get automated requiring less time. For example in CARD the use of electronic archiving has shaved off the largest process time. Process simplification often accompanies the introduction of e-E-Government. ASYCUDA which is used by more than 60 countries for processing import/export by the Customs agencies ensures that the number of signatures needed are cut by 60% \(^{xvi}\). Some of the efficiency benefits reported by different applications are:

- Faster processing, shorter wait, and shorter queues
- Less number of trips to government offices: saves transport cost and avoids wage loss
- More accurate and legible documents, easy recovery from errors, better reception areas
- Lesser corruption and more transparency
- Improved access to offices (delivery points are closer and some times available 24X7). There are fewer intermediaries.

The table below presents several examples from e-government applications that report significant gains in efficiency.

**Examples of Efficiency Gains**

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of Application</th>
<th>Number of days to process before application</th>
<th>Number of days to process after application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizen’s Service center, Bahia, Brazil (^{xvii})</td>
<td>Registration of 29 documents</td>
<td>Several days</td>
<td>20-30 minutes per document, one day for business licenses</td>
</tr>
<tr>
<td>Chilean Tax system online (^{xviii})</td>
<td>Filing Taxes online</td>
<td>25 days</td>
<td>12 hours</td>
</tr>
<tr>
<td>CARD, AP, India</td>
<td>Valuation of Property</td>
<td>Few days</td>
<td>5 minutes</td>
</tr>
<tr>
<td>CARD, AP, India, Land Registration</td>
<td></td>
<td>7-15 days</td>
<td>2-3 hours</td>
</tr>
<tr>
<td>Bhoomi, India, Karnataka Updating Land Registration</td>
<td></td>
<td>1-2 years</td>
<td>30 days for approval, request completed on demand</td>
</tr>
<tr>
<td>Bhoomi, India, Karnataka Obtaining Land Title Certificate</td>
<td></td>
<td>3-30 days</td>
<td>5-30 minutes</td>
</tr>
<tr>
<td>InterstateCheck Posts, Gujarat (^{xix})</td>
<td>Collect Fines for over loading</td>
<td>30 minutes</td>
<td>2 minutes</td>
</tr>
</tbody>
</table>
In some applications effectiveness of teachers or health workers has been improved because tools have been provided to them to better plan and organize their activities. For example 200 health workers of a district in AP have been given a personal digital assistant to keep records. This has saved nearly 20% of their time that was spent in record keeping. This time can be utilized to serve more people. The PDAs also help in improving follow up, making the immunization program more effective.

**Empowerment of Rural Communities**

A large number of pilot projects in which rural Internet kiosks have been opened in Asia, Africa and Latin America have not been completely successful in terms of their economic viability. The following conclusions can be drawn from the successes and failures among the pilot rural tele-center projects:

- Rural populations are willing to pay a fee for systems that have very clear business or personal uses
- Villagers are not enamored of electronic delivery. The uptake depends on whether significant value is being delivered in comparison with the existing ways of receiving information and services.
- Intermediaries are often needed to respond to the specific information needs of rural citizens and to interpret and disseminate the knowledge from public documents.

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of Application</th>
<th>Number of days to process before application</th>
<th>Number of days to process after application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandal Comp-uters, AP India</td>
<td>Issue of Caste Certificates</td>
<td>20-30 days</td>
<td>15 minutes</td>
</tr>
<tr>
<td>Customs Online Jamaica</td>
<td>Processing bill of entry</td>
<td>2-3 day</td>
<td>3-4 hours</td>
</tr>
<tr>
<td>Customs Online Philippines</td>
<td>Release of cargo</td>
<td>8 days</td>
<td>4 hours – 2 days to release cargo</td>
</tr>
<tr>
<td>On-line Tax, Singapore</td>
<td>Issue of Tax Assessments</td>
<td>12-18 months</td>
<td>3-5 months</td>
</tr>
<tr>
<td>Beijing’s Business E-Park, China</td>
<td>Online application for 32 business services</td>
<td>2-3 months for business license Many visits to multiple offices for filings</td>
<td>10-15 days for business license Several seconds for routine filing for companies</td>
</tr>
</tbody>
</table>
- Poor telecom and power infrastructure in rural areas can affect the economic viability of rural kiosks.

The framework below consolidates this learning. It illustrates that there are four necessary conditions that need to be fulfilled for effective service delivery and bridging of the digital divide (see figure below).

Most of the experiments documented so far do not embody the four elements outlined above.

It is fair to conclude that many of the applications focused on social impact have been able to build an efficient (less time to transact) service delivery system. However only a few have succeeded in tackling corruption. E-Government needs to be seen as one of the many tools to combat corruption and should be implemented as a part of a wider program for tackling corruption (see OPEN in Seoul). It is difficult to imagine that a single department which implements egovernment can eradicate corruption permanently, whereas it continues to thrive in many different places.

Although large amounts of information is now published on Government web sites which should have led to greater transparency and accountability, this has not always been the case. In most countries citizens are not ready to engage in a dialog on how they should be governed. Intermediaries (NGOs, grass root organizations, media) are often required to generate a debate on public issues to draw in the citizens. The work of the Center for Responsive Politics in publishing analysis of public domain data to highlight the influence of money in the formulation of public policy illustrates the constructive role intermediaries can play. Its website an open secrets guide provided timely analysis of voting patterns in the house of representatives on a bill that pitted long distance telecom companies against the baby bells. The analysis correlated the
voting pattern to the campaign contributions from the two sides and demonstrated that the voting was across party lines, strongly influenced by the size of the campaign contribution. The web site presented information to citizens in a format which made it actionable, allowing citizens to make a comparative judgment on the openness of campaign finances of different congress persons.

**Major Economic Impacts**

**Cost Reduction in Service Delivery**

Although many applications in developing countries have shown significant benefits, in general, cost reduction has not taken place. In most cases E-Government becomes an additional channel to offer services. Even in developed countries where Internet penetration is high, the proportion of citizens using portal for services is low. Until this proportion reaches a level that there can be some cut back in the number of personnel employed in delivering services through the traditional departmental channel or telephone, there will be little reduction in costs. In fact initially the costs will rise on account of investments in organizing electronic delivery. In the developed countries, privacy and security issues seem to be holding the citizens back. In the developing countries the Internet penetrations are very low.

Without a critical mass using the application, particularly for revenue generating applications such as taxes, or fee-based services, cost recovery does not seem promising. However, experience has shown that even rural poor citizens are willing to pay a reasonable fee for a useful service. There are a few examples such as Bhoomi project in Karnataka where farmers pay a transaction fee of 30 cents for receiving a signed copy of land title from an on-line kiosk. In the first year 5.5 million farmers have collected the tile, forking out nearly 2 million dollars, which is half the cost of the entire project.xxvii

**Control of Government Expenditure**

Many countries have implemented integrated financial management systems to track and control payments made out of Government treasuries. For example the state of Karnataka has connected all its 215 treasuries through a satellite based network xxviii. Every payment is now centrally authenticated to ensure that a budget provision exists for the payment and that it is not exceeded. Such systems focus on expenditure control, not exploiting the full potential of the system to combat corruption and improve service delivery. Experience suggests that it is difficult to implement IFIMIS as they are complex and need to be comprehensive in their scope to deliver concrete benefits xxix.

Another strategy to control expenditure is to introduce paper less offices in large government departments (see eSAT in Mexico, SmartGov in Andhra Pradesh). A few of such applications have been implemented. However, more potent savings through down sizing of governments has not yet happened because of the strong resistance from well organized unions of Government employees.

**Growth of Tax Revenue**
The inefficient collection of taxes in many developing countries has led to cash-strapped governments that are incapable of enforcing tax payments. Moreover, corruption in the collection process leads to less money going to the government and lack of public confidence in the system. Modernizing Tax Systems through E-Government applications has been a priority for many countries. Through online tax filing and processing system, governments aim to reduce the corruption and enhance transparency to create more public trust. The e-SAT system in Mexico now collects 80% of all tax revenues and saves significant costs in the process. Chile has also been able to reach significant savings through their Tax Online System. With over 400,000 taxpayers checking their assessments, and 200,000 submitting taxes online, the government had begun to see significant cost savings and increased accuracy. The Chilean exchequer has collected $1.943 billion through the electronic system.xxx

Computerized interstate check posts in Gujarat, India, have resulted in a three-fold increase in tax collection over 2 years. Revenue increased from $12 million to $50 million, paying back the total project cost of $34 million in just 6 months.


As indicated earlier, much of the assessment of impact is based on a few case studies that have been documented. The scope and coverage of egovernment applications in developing countries is still very limited. The state which is considered a leader in India—Andhra Pradesh has implemented egovernment applications in 10 of its 70 departments. Many of these applications are not state wide—they reach only the urban populations in large towns or the capital city. This assessment will be true of most developing countries like Brazil, Chile, Mexico which are considered leaders in egovernment implementation amongst the developing world. Therefore for any significant social or economic impact successful egovernment projects have to be replicated on a larger scale.

Secondly, the impact has been judged in absolute terms. We really do not know whether the costs and benefits are commensurate even in the so-called successful projects. ICT can be used to do a variety of things, for example, to teach the alphabet to rural children. The issue is whether the investment is worth the outcome that is reached. A better assessment of cost benefit is needed. Methodologies need to be evolved for carrying out such an analysis. This section explores issues concerning replication of successful pilots by identifying factors that contribute to success in implementation of large scope large scale projects—such as the ones documented in this report. It presents risk factors that can lead to failure in implementation. It also presents a very rough guide to evaluate egovernment projects.

4.1 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 created a social or economic impact by reducing total processing time (service 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 wheel. 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 training. 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 manual. In nine of the ten cases cited in the last section, some components of an electronic service delivery continue to be handled manually. 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.

4.2 Possible Risk Factors in Implementing E-Government Projects

Evaluations of four e-government projects that were deemed to be successful have indicated that at least two projects are faltering. An analysis of the two faltering projects suggests a number of risk factors that can affect the long-term sustainability of e-government projects. These are:

A weakening of political support. Often ministerial changes result in a situation where the new minister is not supportive of the ideas and innovations implemented by her predecessor. A similar risk arises because of frequent changes in administrative leadership when key functionaries are transferred. Project initiators need to ensure that key administrative functionaries will have an adequately long tenure to see through the implementation.

Projects that take a very long time to implement are at risk because of rapid changes in technology, and the fact that realization of benefits comes long after the pains of implementing the application. This tends to heighten resistance. On the other hand, implementation that is
hurried through because of political pressure to show quick results or the uncertainty created by short tenures of administrators, carries its own set of risks. Often corners need to be cut and some key elements of the application are either not taken up or are done in a shoddy manner.

An inappropriate definition of project scale and scope also results in a failure. If the project’s scale is ambitions, the task may become unmanageable or resources may run dry. If new and untested technology is used some vital components of an application may not work because of the breakdown of technology. Similarly, a project scope defined too narrowly may not deliver the intended benefits.

It is important to manage expectations of various stakeholders. Often e-government is treated as a panacea for several long-standing ills of a system. It needs to be recognized that governance reform is a multi-pronged process, in which e-government is only one tool among many other changes that need to be made. E-government projects focused on transparency and corruption need to be implemented in a context of wider administrative reform.

Poorly designed systems in terms of the underlying architecture, technology and process can lead to implementation failures. If computerization is partial and not conducted with re-engineering initiatives, then many of the benefits do not accrue. Such systems may function for a while because of the higher level of monitoring and supervision, but in the absence of process improvements such temporary gains cannot be institutionalized.

Considering the degree of change that is involved in implementing e-government projects, there is a temptation to bypass existing employees by outsourcing work to private sector or hiring new recruits. However, unless the resistance among bypassed employees is broken through education, training, or any other means, it continues to foster. The system can get sabotaged after the initial champion has left.

Normally close identification of a project with a single powerful champion automatically weakens the support that a project can receive from peers and other departments. It is best not to personalize a project.

4.3 How Can A National Effort Be Orchestrated?

In the western world where egovernment 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)xxxiv. 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 egovernment, are now grappling with the question of which is the right approach: centrally driven versus departmental initiative?

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.

4.4 Need for Independent Evaluation

The most successful applications demonstrate that it is important to identify measurable benefits. Post implementation audit of benefits, particularly feedback from the clients allow for improvement that adds value and expands client base. To ensure that projects have been evaluated adequately, independent auditing and evaluating has been cited as a best practice.

Currently, there are no frameworks or methodologies to accurately measure the success or failure of an E-Government project. Success is often judged on the basis of media reports, recognition by international agencies and an assessment provided by the project implementers. In all of these cases, the clients that are supposed to benefit from these projects supply no feedback. If feedback is recorded, it is usually anecdotal and not based on a systematic survey. A recent initiative by the GKPS in evaluating four successful projects in India through independent agencies has revealed surprising results. Two of the four projects, which were recognized as successes are actually showing up as failures. A recent evaluation by DFID of the CARD project in AP has also revealed some unexpected results that were not readily apparent. It is important that E-Government projects have an in-built component of periodic assessment by an independent agency. This is in addition to a continuing feedback mechanism from the clients.

4.5 Practical Methodology for Evaluating E-Government Projects

There are a number of factors that increase the complexity of the evaluation process of e-government applications. E-government applications are characterized by a large number of stakeholders. Often the projects are large and complex and many of the cost elements are not explicit. For example, change management accounts for nearly 30-40% of the effort required in implementing the system and requires significant management attention, the cost of which is difficult to quantify.

Private sector investments are analyzed by using the discounted cash flow method that looks for a positive net present value. To compute cash flows one needs to monetize all the benefits and costs. Since many of the benefits of e-government applications are soft such as more transparency, less corruption, and improved service delivery computing a monetary value of these benefits is difficult.

A practical methodology of evaluating e-government involves the following steps:

1. Identify all the stockholders who will be impacted by the application. The impact could be positive in terms of benefits or negative.

2. Through preliminary discussion with a small sample of different types of stakeholders list down the perceived costs and benefits. It is useful to draw upon the potential benefits
(planned in the project feasibility report) to elicit a meaningful response in the discussions.

3. Develop indicators to measure different types of benefits that have been listed out. These could be hard indicators such as bribes paid for a service or soft indicators such as perception of friendliness of operators manning a computerized counter.

4. Define a sampling plan and procedure for conducting a structured survey to measure different kinds of benefits and costs. The sample size needs to be determined so that the estimates based on the sample can be within an acceptable degree of confidence.

5. Carry out a survey. The survey needs to be conducted by trained market researchers. The survey agency should be able to work independently of the government or an implementing agency.

6. The next step is to analyze the survey data and compile results. The survey data needs to be combined with other data collected from log books and transaction logs. Data on investments and operating costs would have to be collected from the implementing agencies. Finally the analysis of the benefits and costs has to be presented in a manner so that a judgment regarding the acceptability of the project can be made.

This methodology has been applied quite successfully in the cost benefit analysis of health, education, and road building projects in different contexts. In fact e-government applications share many of the characteristics of such projects. The costs of conducting an evaluation using the above methodology are quite reasonable. In most developing countries it should be possible to evaluate an application with a cost of less than $10,000.

5. Conclusion: What Can Be said About the Impact of E-Government

Many of the applications implemented across developing countries may not be seen as true E-Government applications, as some part of the service delivery, particularly processing of payments is not electronic. The delivery model is not self service and applications that require inter departmental coordination are still not on-line. However the applications have delivered significant benefits to all stakeholders, and that is what should provide the incentive to go ahead.

No developing country is likely to be fully ready to embrace a comprehensive program of E-Government. However in many areas applications can be developed which e-enable a large portion of a transaction and deliver significant benefits. Rather than waiting for complete readiness, an approach of learning by trial and consolidating small gains is recommended. The first steps are to identify a few pilot projects in departments that have exposure to computerization, a large interface with the public and are experiencing problems with corruption. Benefits of implementing the pilots need to be articulated in specific terms. Impact on transparency, corruption and poverty must be the underlying concern.

Making e-government widespread entails bridging the digital divide which involves providing access to the Internet to rural areas and setting up of information kiosks. A few political leaders and civil servants who believe in the idea of reform and have initiated innovative applications.
The vast majority, however, is yet to awaken to the potential of e-government for reform. A major task is to build institutional capacity for governance reform.

The overall social and economic impact of e-government in developing countries may at best be marginal (if measured through progress on human development and economic indicators) because the investments that have been made so far are small. Scholars have not attempted to measure this impact as perhaps it is too early to do so. It is therefore difficult to make a recommendation that investment in egovernment should be stepped up to a certain level.

Analysis in this report confirms the potential that exists for creating a social and economic impact, provided that the applications are carefully chosen and implemented successfully. E-Government can advance the agenda on governance and economic reform, transparency, anti-corruption, empowerment and poverty reduction. E-Government should not be seen as a panacea for the complex and well-entrenched problems of corruption and poverty. These problems require multi pronged action. E-Government is one of the many tools whose potential in tackling these problems needs to be recognized. E-Government provides an entry point for reform minded politicians, as it is able to make a dent on some of these problems without a head on confrontation with the vested interests that would like to preserve the status quo. Several successful projects that were referred to in this report have shown that gains from E-Government can be real but implementation requires a lot of administrative effort. The challenge is to promote widespread use.

6 Case studies of social impact of e-government

The following case studies are included in the report:

<table>
<thead>
<tr>
<th>Number</th>
<th>Title of the Case</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BHOOMI: computerization of land records;</td>
<td>A printed copy of the RTC (a land title document needed for many tasks such as obtaining bank loans) can be obtained online in 15 minutes at any of the 180 computerized kiosks in Karnataka, India.</td>
</tr>
<tr>
<td>2</td>
<td>Gyandoot: community-owned rural internet kiosks</td>
<td>A government-to-citizen Intranet in MP (India) gives marginalized tribal citizens the opportunity to access knowledge and a number of government services with minimum investment. The project is faltering after an initial success.</td>
</tr>
<tr>
<td>3</td>
<td>Use of PDAs by ANMs</td>
<td>Health workers have been provided with PDAs to record delivery of services and plan activities.</td>
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<tr>
<td>4</td>
<td>Counseling for Teacher’s Transfers in Karnataka</td>
<td>A simple system that helped reduce corruption in transfer of school teachers in Karnataka by making the entire process transparent.</td>
</tr>
<tr>
<td>5</td>
<td>CRISTAL: Disseminating Budget Information in Argentina</td>
<td>Publishes budget details to make the Government accountable and transparent.</td>
</tr>
<tr>
<td>6</td>
<td>Mexico’s on-line income Tax</td>
<td>An interactive web site that contains basic information pertaining to Mexico’s tax laws and procedures, permits</td>
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<tr>
<td>Case Study</td>
<td>Description</td>
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<tr>
<td><strong>7</strong></td>
<td><strong>OPEN: Seoul's Anti-corruption Project</strong></td>
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<tr>
<td></td>
<td>The OPEN system publishes on the Internet information relating to municipal government services, permits and licenses. It enables citizens to track the progress of their applications thus making the entire system transparent.</td>
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<tr>
<td><strong>8</strong></td>
<td><strong>E-procurement in Brazil, Chile and Mexico</strong></td>
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<tr>
<td></td>
<td>These Web-based procurement systems permit registration of vendors, display of request for bids by Government departments, electronic bid submission by the vendors, reverse auctions and publication of results after suppliers are selected.</td>
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<tr>
<td><strong>9</strong></td>
<td><strong>Online Customs in Philippines</strong></td>
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<tr>
<td></td>
<td>In 1995, the Customs authority in Philippines implemented an IT based system for payment, clearance processing and shipment release using a software package ASYCUDA, developed by UNCTAD and used by more than 60 countries.</td>
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</tr>
<tr>
<td><strong>10</strong></td>
<td><strong>Computerized Interstate Check posts in Gujarat</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of computers/electronic devices at 10 remote interstate border check posts in Gujarat, India, to collect fines. It has reduced corruption and significantly increased the state's revenue.</td>
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</table>

Case studies 1-5 have been chosen because they have demonstrated some impact on poverty alleviation, empowerment of citizens and increased transparency and lowered corruption in service delivery. Cases 6-10 have been chosen because they illustrated some impact on revenue collections in government, improving service delivery to business, improving transparency and reducing costs in government procurement, and reducing corruption in service delivery to business.

### 6.1 Bhoomi Computerization of Land Records

**Reasons for development**

Prior to implementation of Bhoomi in Karnataka state in India, land records (ownership of each parcel of land, its area and cropping pattern, and village maps that reflected the boundaries of each parcel) were maintained by 9,000 Village Accountants, each serving a cluster of 3-4 villages. Requests to alter land records (upon sale or inheritance of a land parcel) had to be filed with the Village Accountant. An update to the land records (in case of sale or inheritance) was a lengthy process of enquiry carried out by a Revenue Inspector. The changes were to be made in a 30-day period if the request was not disputed but in practice, it could take 1-2 years for the records to be updated.

Land owners who wished to get a copy of their land title for obtaining a Bank loan had to make several visits to the VA, often pay bribes ranging 200 to Rs 2000 and wait for 3 to 30 days. Land records in the custody of Village Accountant were not open for public scrutiny. The Bhoomi project was implemented to improve the delivery of service, lessen corruption and support the planning function in several departments by making land record data easily accessible.

**Main functions and features**

Department of Revenue in Karnataka has computerized 20 million records of land ownership of 6.7 million farmers in the state. In the manual system, land records were maintained by 9,000
Village Accountants, each serving a cluster of 3-4 villages. Farmers had to pay bribes and make several visits to the accountant (took 3-30 days) to get a copy of the RTC—a document needed primarily for obtaining bank loans. Land records in the custody of Village Accountants were not open for public scrutiny. Mutation requests to alter land records (upon sale or inheritance of a land parcel) had to be filed with the Village Accountant. A Revenue Inspector was authorized to update the record after a process of enquiry spanning 30 days. In practice, however, it could take 1-2 years for the records to be updated.

Now a signed copy of the RTC can be obtained online by providing the name of the owner or plot number at computerized Bhoomi kiosks in 187 taluk offices, for a fee of Rs.15. A second computer screen faces the clients to enable them to see the transaction being performed. A farmer can file a mutation request at the kiosk and check the status on a Touch Screen provided on a pilot basis in some kiosks. If the revenue inspector does not complete the mutation within 45 days, a farmer can now approach a second person in the district who has been designated to authorize a mutation. Now, mutation requests are to be handled strictly on a first-come-first-served basis. These measures limit opportunities for collecting bribes. Operators of the computerized system are made accountable for their decisions and actions by using a bio-login system that authenticates every log-in through a thumb print.

Data on crop survey is currently collected manually and updated in the taluka database in a batch mode three times a year. In a pilot experiment, a locally designed handheld computer (Simputer) has been provided to 200 village accountants for capturing the crop data live in the field. Village Accountants have found it easy to learn the operations of the Simputer.

The BHOO MI database from all the taluka kiosks will be uploaded on a central database every evening using a VSAT network. Rural Internet kiosk will be able to access the data. Their password, machine ID and the phone ID will be verified. In a pilot experiment 20 kiosks have been set up by N-logue (a private company) using wireless in the local loop (corDECT) technology developed by a leading Institute of Technology. A fee of Rs 10/- per RTC collected by the owner will make a 1000 rural kiosks viable in rural Karnataka.

Expected Results
The Bhoomi project was implemented to improve the delivery of service, lessen corruption and support the planning function in several departments by making land record data easily accessible. The system was expected to generate various types of reports on land ownership by size, type of soil, crops, owner's sex, etc., which would be useful for planning poverty alleviation programs, and supplying agricultural inputs.

Evaluation For The Perspective Of Stake Holders
Bhoomi has been able to improve service delivery and reduce corruption. In the last one year nearly 90,000 mutation requests have been made and the monthly collection of fee has varied from Rs 7.9 million to Rs 14.4 million. Bhoomi demonstrates the benefits of making government records more open so that citizens are empowered to challenge arbitrary action. It also illustrates how automation can be used to take discretion away from civil servants at operating levels. An independent evaluation studies based on a survey of 180 users from 12 kiosks and 60 non users has shown that Bhoomi has significantly reduced corruption and improved service delivery. The table below compares user perceptions of the old manual system and the Bhoomi kiosks.
Ease of Use: 78% of users who had used both systems found Bhoomi simpler; 66% used Bhoomi without help in comparison to 28% in the manual system.

Complexity of Procedures: 80% did not have to meet any officer other than at the kiosk: In the manual system 19% met one officer and 61% had to meet 2-4 officials to get the task done.

Errors in documents: Only 8% errors in land titles issued by Bhoomi in comparison with 64% in the manual system.

Rectification of errors: 93% sought corrections after discovering an error while only 49% sought a correction in the manual system. 50% felt that Bhoomi provided a timely response in comparison to only 4% in the manual system.

Corruption: 66% paid bribes very often in the earlier system in comparison to only 3% in Bhoomi.

Staff behavior: 84% reported Good behavior as against 63% reporting Average for the manual transaction.

Key Lessons
Implementation of Land record computerization has been difficult in India. Bhoomi succeeded because there was a champion who worked a 15-hour day for over 12 months, devoting 80% of his time to the project. Minimizing resistance from staff by harnessing political support was an important contributory factor. Extensive training coupled with a participatory style also helped to diminish resistance.

As an implementation strategy, manually written RTCs were declared illegal from the day on which the computerized system became operational in a taluka. The notification was issued on a taluk-by-taluk basis as and when the scheme became operational there. This forced the department and the farmers to completely rely on the new system. The strategy worked because the application design was robust and did not falter.

There was some concern in Karnataka about raising the user fee to Rs.15 from Rs.2 in the manual system. Often these fears about user fees are exaggerated, particularly if services have genuinely been improved. The response of the people at taluk level has been overwhelming. Nearly 6 million farmers have collected the RTC and paid a user fee totaling Rs. 100 million.

6.2 GYANDOOT: COMMUNITY-OWNED RURAL INTERNET KIOSKS

Reason for development
The Dhar district in central India has a population of 1.7 million; 60% live below the poverty line. A participatory rural appraisal carried out by the district administration highlighted the following concerns: absence of information about prevailing agriculture produce; difficulty in obtaining a copy of land title; frequent visits to district headquarter for tasks such as filing a complaint or submit applications. The goal of the Gyandoot project was to establish community-owned, technologically innovative and sustainable information kiosks in the district to provide some of these services at their door step.

Main functions and features
The Gyandoot project was launched on January 1, 2000 with the installation of a low cost rural Intranet covering 20 village information kiosks in five Blocks of the district. Later, 11 more kiosks were set up with private ownership. Villages that function as Block headquarters or hold the weekly markets in tribal areas or are located on major roads (e.g., bus stops) were chosen for
establishing the kiosks. The entire network of 31 kiosks covers 311 Panchayats (village committees), over 600 villages and a population of around half a million (nearly 50% of the entire district).

Kiosks have been established in the village Panchayat buildings. Information kiosks have dial-up connectivity through local exchanges on optical fiber or UHF links. The server hub is a Remote Access Server housed in the computer room in the District Panchayat. User fees are charged at the kiosks for the services provided. Local rural youth act as entrepreneurs, running these information kiosks along commercial lines. He/she needs only maintenance, limited typing (software is menu driven) and numeric data entry skills. For the initial kiosks, village committees each selected three candidates to receive training at the District Council. At the end of the training, the best trainees were selected to run a kiosk.

The following services are now offered at the kiosks: Agriculture Produce Auction Centers Rates; Apply for copies of Land Records; On-line Registration of Applications for obtaining income/caste/domicile certificates; On-line Public Grievance Redress; Village auction site for land, agricultural machinery, equipment, and other durable commodities; an updated information regarding beneficiaries of social security pension, beneficiaries of rural development schemes, information regarding government grants given to village committees, public distributions, data on families below the poverty line, etc. are all available on the Intranet, which makes the government functioning more transparent.

Twice each day, the person managing the server prints the complaints, applications, and e-mails that have been received and sends them to the appropriate authority. The collector responds to certain queries and complaints. If a complaint cannot be addressed, a reply is forwarded to the kiosk manager. The action necessary to address the problem in the field is expected to be taken within 7-10 days.

**Expected Results**

Each kiosk was expected to earn a gross income of Rs. 4,000 per month (50% from Gyandoot services, 25% from training, and the remainder from job work like typing). The operational costs are Rs 1,000 per month. Net income of Rs 3,000 must cover investments and provide a profit to the entrepreneur.

**Evaluation From The Perspective Of The Stake Holders**

In practice, the gross income has ranged between Rs. 1,000-5,000 per month; depending upon the skill and zeal of the manager. Agricultural produce rates, land records and grievance services are the most popular features of the kiosks, accounting for 95% of the usage. The project has begun to falter after a period of initial success. Recent studies indicate that unreliable infrastructure and citizen perception of inadequate service quality have resulted in the reduction of activity level at the 39 kiosks. This threatens the economic viability of the kiosks. Filing an application for a service from the Gyandoot centers does cut down one visit to the Government office but because of the lack of automation at the back end, the actual delivery of service takes an unacceptably long time, is prone to delay and bribery. This negates any advantage of electronic communication.
Key Lessons
The Gyandoot system helped in filing complaints not just because a communication system has been installed, but due to improvements at the back end that have made district offices more responsive. The first individual to receive the complaint is a private functionary with an incentive to forward it through the system. However, if the kiosk manager were to collect all petitions in a week and travel to the district, could the same responsiveness be achieved? For information about commodity prices would radio, which has the largest reach in rural areas, be an effective alternative means? The question concerns delivery of local content.

6.3 Use of Personal Digital Assistants by ANMs in Nalagunda, Andhra Pradesh

Reasons For Development
The public health delivery in India is outreach based. Immunization, contraceptives, MCH care is provided to rural populations by Auxiliary Nurse Midwives (Paramedics) at their doorstep. Each ANM is assigned a couple of villages (often located 5-10 miles apart) covering a total population of 5,000 people. The ANMs need to maintain bulky registers listing all households and family members and are expected to keep a record of all services provided. About 30-40% of ANMs time is spent on record keeping and reporting. Quality of exports is often poor and unverifiable. There is wastage of resources because of poor follow up (significant drop in coverage when follow up doses of a vaccine need to be given).

Features And Functions
Government of Andhra Pradesh is providing computers to each of its primary health center to maintain records of families and in a pilot in one of the districts, PDAs have been provided to 200 ANMs to maintain and update client data.

While nursing or counseling the beneficiaries, the ANMs collect data using the PDA in the villages. At the PHC they transfer the data from PDA to the desktop. All data that is available on the desktops at various PHCs is transferred to the district level and State Health Commissioner’s office using available network. Data compilation and report generation could now be done at the PHC level, district level and State level.

Data thus compiled will be available in the PDAs in the form of information like house-wise data of pregnant women in the village, immunization information of children and other health care programs, demographic data, mother and child health care programs, family planning services, birth and death registrations, etc.

Expected Results
ANMs are expected to gain productive time as their record keeping burden will be lessened. Their effectiveness is also expected to increase as the follow up can be systematic and activities can be planned.

Evaluation From Stake Holders Perspective
Workshops have been organized to collect feedback from ANMs on the use of PDAs. ANMs have reported a lessening of record keeping burden and have had no difficulty in using the PDA as it is icon driven. Data on follow up rates and feedback from rural citizens needs to be collected to determine if the effectiveness has increased.
Key Lessons
Each PDA costs about $450, an expense which is not easily affordable by a fund starved health care system. Concrete benefits need to result before the scheme is replicated in other districts.

6.4 Computerized Counseling for School Teachers’ Transfers in Karnataka, India.

Reason for development
There are about 275,000 teachers working in Government schools in Karnataka. Every year, the commissionerate receives 10000-15000 applications from teachers working in Government schools requesting to be transferred to a place of their choice. The process of handling these requests was riddled with corruption and nepotism. Often action was initiated at different points, resulting in multiple transfer orders. There were no guidelines for processing transfers. District authority could not keep track of the vacant posts in the district as transfer orders were issued at various levels. There used to be exodus of teachers from rural backward districts to urban developed towns creating a permanent shortage of teachers in some schools.

Main Functions and Features
The Department of Public Instruction in Karnataka has introduced a new method of effecting teachers’ transfers through computerized counseling. After due consultation, priority for each reason was determined (current priority: 1. terminally ill, 2. suffering from serious illness, 3. physically handicapped, 4. spouse in government service posted elsewhere, 8. verge of superannuation, 9. working in the same place for more than 7 years) and publicized widely. Transfer request need to be submitted by the last working day of the school. All the requests are now prioritized according to the reasons indicated in the request. A list of the names of the transfer aspirants along with their ranking is published and objections if any are invited. Teachers are called in the order of priority and asked to select their place of posting from among the places available on the computer monitor. Once a selection is made a transfer order is generated and the database of vacant positions updated. After every session of counseling, a list containing names of teachers who were counseled along with the posting details and another list containing vacant positions were published. Every step in the whole process was transparent.

Expected Results
The system was expected to increase transparency and eliminates bribery and corruption prevalent in the earlier manual system.

Evaluation of Results from the Perspective of the Stakeholders
Every district receives around 1500 applications for transfer. It takes 20 days to process the request. On an average 75-100 are called to attend counseling in a day and it takes about 2-5 minutes per teacher to complete the transaction. Corruption has been reduced. Since the entire processing is done during vacation period as compared to the year-round transfers in the earlier system, there is less disruption of teaching in schools.

Key Lessons
Usage of the system was discontinued after two years. Political support at the highest levels is very critical in such system dealing with political corruption.
Case study authors: T.M.Vijaybhaskar, Commissioner for Public Instruction in Karnataka and S.Lakshmeesha, Senior Systems Analyst, NIC-Education, Bangalore.

6.5 CRISTAL: A Tool for Transparent Government in Argentina

Reason for Developing the System
Perceptions of government corruption were a major political issue in the Argentine electoral campaign of 1999. The ALIANZA candidate for president, Fernando de la Rua, promised that, if elected, he would head a Gobierno de Cristal, eliminating the corrupt practices that periodically came to light during the previous administration, and thereby restore citizens' confidence in government.

Main Features And Functions
The mission of the Cristal Government initiative, launched by the current administration, is to disseminate online, and in an easily understood format, all information concerning the use of public funds in Argentina. This includes information not only about the amounts of money devoted to different programs, but also how these funds are administered. For example the site carries information on: purchase orders and public contracts, payment orders submitted to the National Treasury and other treasuries of the National Public Administration; payments issued by the National Treasury and other treasuries of the National Public Administration; financial and employment data concerning permanent and contracted staff, and those working for projects financed by multilateral organizations; an account of the public debt, including terms, guarantees, interest costs; inventory of plant and equipment and financial investments; outstanding tax and customs obligations of Argentine companies and people; and regulations governing the provision of public services, and the regulatory organizations themselves.

Expected Results
Evaluation From The Perspective Of Stake Holders
Website staff responds to a user's question within 24 hours. To date, most user comments are critical of the quality of information available, and many include suggestions for further improvements. The growing number of visitors to the site and the feedback from the press and other users suggest that the Cristal website is emerging as an Internet brand of the National Government.

Case study author: Lic. Gustavo Axel Radics, General Coordinator for the Cristal website.

6.6 e-SAT: Mexico’s On-line Tax Administration

Reasons For Development
Mexico’s federal tax administration (the Servicio de Administración Tributaria, or SAT) has been frequently described as having “serious deficiencies.” Cumbersome procedures and a diminished sense of compliance hazard have resulted in the non-registration of an estimated 1.9 million potential taxpayers in the tax base. As for the 7,557,692 million taxpayers currently registered in the “padrón activo”, poor intra-agency communication and coordination, the inefficient deployment of human and information resources, internal corruption, and an endemic skepticism regarding the unfairness of Mexican tax collection policies and practices have combined to make untimely payment, fraud, and outright evasion commonplace.
Inspired by the early successes experienced by other Latin Nations in using ICT for on-line taxes and procurement, the Zedillo administration (1994-2000), as part of its OECD based program of regulatory and administrative reform, initiated the e-SAT project.

**Main Functions And Features**
By 1998, the newly autonomous tax administration had established an interactive web page that (i) contained basic information pertaining to Mexico’s tax laws and procedures and (ii) permitted obligated taxpayers to electronically file their annual declarations. These capabilities were supplemented by the introduction of online tax payments (via an electronic funds transfer from the portal of a taxpayer’s bank to the federal treasury). The primary beneficiaries of this new system were the large corporations obligated to use same pursuant to the Onceava Resolución of February 1998. Although they were given the option under this law, most smaller and medium sized corporate entities declined to engage in electronic tax transactions. In 2000. SAT added the following tax transactions: (i) obtainment of a personal form of electronic identification (the CIEC), (ii) inscription in the RFC, (iii) submission of a declaración informativa, (iv) the presentation of a dictamen, (v) the presentation of a declaración estadística, (vi) the modification of taxpayer data (i.e., the declaración de corrección de datos), (vii) an inquiry into the status of a taxpayer account (prior payments, declarations, legal or administrative filings, etc.), and (viii) the scheduling of an appointment with a SAT tax counselor.

**Expected Results**
Introduction of online tax practices will result in a 70% decline in the quantity of paper purchased, used, and stored by the SAT. The cost savings expected to accrue to the SHCP (including the SAT) as a result of this change in practice are estimated to be on the order of 3.5 million pesos. Another goal was to reduce the total size of the Servicio by 30% over the next five years.

**Evaluation From The Perspective Of Stake Holders**
The SAT received 147,405 electronically filed declarations and 180,123,000,000 pesos worth of online tax payments between August 2001 and July 2002. The majority of these transactions were realized by corporate taxpayers. Mexico’s recent (August 2002) campaign to expand the use of online declaration filing and payment practices to an expanded range of citizens resulted, moreover, in the electronic presentation of 200,000 declarations and 1,600,000 payments (400,000 realized through the portal of a commercial bank, 1.2 million tendered via tarjeta tributaria). On the basis of these early results, government officials estimate that at least 80% of all Mexican tax revenue is now collected online.

Significant savings in time in receipt, confirmation, and posting of a tax payment (processes which previously took up to two weeks to complete are now done instantaneously for a fraction of the cost). SAT saved at least 12 million pesos in 2001 due to down sizing.

**Key Lessons**
Need for a long term plan that is capable of transcending the vicissitudes of national and local politics is a key lesson. The necessity of devising of parallel strategies for overcoming the obstacles posed by weak telecommunications infrastructures and low rates of Internet connectivity is another lesson. Close consideration must be given to the degree of formalism present in the national legal culture. Where it is high – as is the case in Mexico – legal and
administrative reform with respect to electronic signatures, data messages, archiving, privacy, and information crimes must precede (or at the latest coincide with) the implementation of an e-government application.

Case study author: Kossick Jr R. M., CIDE, Mexico

6.7 OPEN: Anti-corruption Drive by Seoul Municipality, South Korea

Reasons For Development
Extensive municipal regulations, spurred by the expansion of the municipal bureaucracy, had created new opportunities for corruption. In 1998, the Mayor of the city declared an all-out war on corruption through preventive and punitive measures, increased transparency in administration, and enhanced public-private partnership. The introduction of e-government was one element of a broad range of initiatives. Many of the measures were introduced prior to computerization. These included cutting and simplifying regulations, and actively involving citizens in various anti-corruption activities.

Main Functions And Features
The e-government side of the war on corruption involved setting up a portal called OPEN – Online Procedures ENhancement for Civil Applications. The portal explains to users the elements of the anticorruption drive, displays an anticorruption index (compares five services that are most susceptible to corruption), educates citizens on rules and procedures, and enables real-time monitoring of progress of an application for a permit or license. It makes completely open and transparent those administrative practices that were vulnerable to corruption.

Expected Results
The OPEN system of Seoul Municipality exemplifies the impact on corruption of making transparent the decision making processes and actions of individual civil servants. The system enables on-line tracking of individual applications for a variety of municipal licenses.

Evaluation From The Perspective Of The Stake Holders
In the first 13 months of the OPEN system, civil applications published by each city department totaled 28,000, and the number of visits to the OPEN site reached 2 million by the end of year 2000. The OPEN system has been evaluated in different ways. Results from a survey of 1,245 citizens showed that 84.3% believed that OPEN led to greater transparency. Other surveys conducted by the local chapter of Transparency International in 2000 and 2001 indicate a growing interest but a marginal decline in user satisfaction over time. There was little change in the perceived benefits of reduced time or easy access. However the percentage of respondents identifying greater transparency (25.1% in 2000) and prevention of corruption (9.3% in 2000) as benefits did go down over this time-period by 3.3 and 1.4% respectively.

Key Lessons
The focus of the anticorruption program was not on IT but on simplification of regulations and procedures, re-engineering of work practices, transparency in procedures, and effective communication with the citizens. The learning emerges that in order for anti-corruption efforts to be effective, reformers must look beyond individual instances of corrupt behavior and focus on the structural factors that allow corruption to develop. The anti-corruption drive in Seoul showed...
the success of a multi pronged attack. Two factors contributed to the success in implementation. First, there was strong leadership provided by the Mayor. Second, there was widespread citizens’ participation.

6.8 eProcurement by Mexico's Federal Government

Reasons for development
In the midst of the 1995 currency crisis the Mexican Federal Government had little or no information concerning government suppliers, procurement prices, and acquired items. No consistent controls on government purchases were available; procurement processes were costly and plagued by corruption; acquisitions were overpriced; and suppliers were concentrated in the Mexico City area. The economic turmoil in the aftermath of the Mexican peso crisis called for deep budget cuts and stricter controls on all public expenditure. The crisis undermined the ruling party’s credibility, strengthened the opposition, and spread the image of widespread government corruption. The Comprasnet system was introduced to try to address these problems.

Main functions and features
This is a Web-based on-line procurement system (Compranet), set up by the Unit of Electronic Government Services within the Mexican Ministry of the Controllship and Administrative Development (MCAD). It permits registration of vendors, display of request for bids by Government departments, electronic bid submission by the vendors, reverse auctions and publication of results after suppliers are selected.

Compranet has managed to funnel through its Web site information and communication aspects about the majority of government procurements. Around 3,000 procurement units within various government agencies post their requirements online, and government suppliers can submit their proposals via the Web site. These phases of the procurement process are visible on the Web site. Online transaction of procurement is much more restricted, but is growing.

Evaluation From The Perspective Of Stake Holders
By April 2002, information and communication aspects of 80% of all Federal Government acquisitions were being routed through the Compranet system. Online transactional activity is estimated to total around 2% of total procurement. Costs for administration of procurement and costs of items procured have been cut, with typical estimates of savings of around 20%. Around 25,000 suppliers make use of the system, and many state and municipality governments have joined the system. Participation costs for business appear to have fallen, and small/medium enterprises from outside the capital region have joined in the procurement process, although there has been no systematic analysis of this. No public estimates are available of the total cost of the system. In 2001, journalists trawling the site found that the President had ordered towels for his presidential palace costing US$500 each (around half average yearly earnings in Mexico). While not good for the ruling party's credibility, this was a visible demonstration of the increasing transparency delivered by Compranet.

Similar benefits were derived by the Brazilian Government when it implemented COMPRASNET following the example of Mexico. Brazil spent about US$7m on system development and maintenance. During the first two years of on-line reverse auction use, the Federal Government is estimated to have saved up to US$1.5m. Besides this positive return on
investment, the system enables better and more transparent procurement, as well as reducing the red tape in the process. For example, a normal procurement process takes more that two months. The on-line reverse auction may be completed in less than 15 working days. The use of on-line procurement has also increased the participation of small businesses in government supplies.

**Key Lessons**

Transparency and probity are increased by publishing government transactions on-line, thereby providing access to anyone, anywhere, at any time. This reduces opportunities for discretionary use of public funds, increasing the impartiality and integrity of such operations. Additionally, having a traceable electronic record of transactions reduces the opportunities for corrupt practices and increases the accountability of public officials.

Case Study Author: Santiago Ibarra Estrada, (santiagoibarra@hotmail.com);
http://web.compranet.gob.mx/

### 6.9 Philippine's Customs Reform

**Reasons For Development**

Diversion of duty and tax payments through the banking system was a serious problem, as were the number of instances when Customs collecting officers ran away with their collections. Another major concern was the unduly long clearance time taken to clear the cargo. The process involved nearly 10 separate documents in multiple copies, that passed through several desks being logged into 20 registers. Over 90 steps and more than 40 signatures and initials were involved. As a consequence, surveys consistently named the Customs Bureau as one of the most bureaucratic and corrupt government offices.

Just like many other Customs administrations in the world, Philippine Customs also was faced with an ever-increasing workload against budgets that remained stagnant in real terms. In fact, the entire government was implementing cost saving measures which included a personnel attrition program.

**Main Functions And Features**

In 1995, the Customs authority in Philippines decided to implement a new IT based system for payment, clearance processing and shipment release from Customs control. The Bureau implemented a standard software package ASYCUDA, developed by UNCTAD and used by more than 60 countries.

An Automated Customs Operating System (AOCS) allows an importer or an agent to create one single electronic clearance document using work stations in their offices. These documents are then processed by the Customs Bureau. For those who have not been extended this Tele-clearance facility, Service Centers operated by the Philippine Chamber of Commerce and Industry digitizes the paper declarations into electronic declarations that are then processed by Bureau computers electronically.

The system also has become nearly paperless. An encrypted file verifying the payment received at banks is sent to Customs via a gateway. Customs computers match this information with the amount of duties and taxes payable. A release order for the shipment is issued once a match has been made. No cash is handled by any Customs Officer.

Software analyzes the "risk profiles" of shipments by comparing their details with some 18 reference files, and then categorizing them as either High, Medium, or Low risk transactions. For low risk transactions duty calculation is automated. For high risk a physical examination of the
goods is mandated prior to assessment. Medium risk shipments require document checks, but not physical examination of goods.

**Expected Results**
The project was expected to increase revenue collection. Given the phased roll out and varying economic conditions, it is difficult to determine the impact of computerization on revenue collection.

**Evaluation From The Perspective Of The Stake Holders**
The total cost of the project was approximately $27 million, of which $19 million was provided by a World Bank loan. The net present value of increased revenue is considered to be significantly higher than the expenditure. The department was not able to meet its revenue targets in 3 of the 6 years, but that may be attributed to the East Asian economic crisis. Improved service was a major benefit. Cargo is released between four hours to two days, as opposed to eight days in the earlier system. Under the new system, business people also enjoy the greater convenience of making payments at familiar banks, instead of lining up for service at the Customs collection stations. The manual system of reconciling payments collected by the banks and the remittances to the National Treasury used to have a backlog of up to four months. The electronic reconciliation process is completed within the day. And banks that fail to remit any collection are immediately detected and penalized. The system enhances revenue generation as computational errors, deliberate or otherwise are avoided. Customs cashiers now have additional time available to carry out audit and reconciliation work.

**Key Lessons**
The long duration of the project also created several problems. Project system requirement specifications were drawn up in 1992. By 1999, when the project was nearing completion, the leading technology had changed from DOS based systems to a Windows platform. Nearly 550 nodes and 40 servers had to be upgraded. In addition, nearly 300 change request notices for modification were made to the implementers, escalating the costs by 40%. Successful implementation was partly the result of using a standard, tried and tested software rather than re-inventing the wheel. The package ensured a significant amount of process simplification, which led to process re-engineering. The use of an independent agency for procurement of hardware was considered a major contributor to the success of the project.


### 6.10 COMPUTERIZED INTERSTATE CHECK POSTS IN GUJARAT

**Reasons for development**
Gujarat has an extensive road network, which carries a large volume of commercial traffic. Gujarat's 10 check posts are positioned at the border with three neighboring Indian states. Nearly 25,000 transport vehicles enter daily through these check posts. Trucking companies want to maximize their earnings from each vehicle. Often this has prompted transporters to load their trucks beyond permissible axle load, creating a serious safety hazard. State governments...
typically have been ineffective at reducing the number of overloaded vehicles. Inspection of 100% of commercial vehicles has been impossible; and check post inspectors have been notoriously corrupt. The Gujarat Motor Vehicles Department (GMVD) controls the road transport activity in Gujarat.

**Main Functions And Features**
In the computerized process, all the check posts are monitored at a central location using video cameras installed at every check post cabin. The video camera captures the registration number of all trucks approaching the check post. (There are flood-lights and traffic lights which make the check posts appear like a runway at night.) A software converts the video image of the registration number to a digital form and the details of the truck are accessed from a central data base. An electronic weigh bridge captures the weight and the computer issues a demand note for fine, automatically. Drivers can use a stored value card for payment.
In each revamped check post a 10 lane approach road of 1.3 kms length has been built to receive the vehicles. Each lane has a video camera positioned high, on a pole, with a proper protective casing. There is a control room with 2 computer servers - the Data Base server, and a video server that captures & relays the video images, frame by frame, to a central server at the RTO.
Operators who man the cabins are from the private sector. With the vehicle's registration number the data base can retrieve information on the make of vehicle, whether or not the National Permit exists and is valid, insurance, whether the vehicle tax has been paid, etc. Once the vehicle arrives at the weigh bridge, the un-laden weight, the actual weight, the amount of overload, and the fine that must be paid is displayed on an electronic (plasma) boards. In this way, the process is made wholly transparent to the driver.

**Expected Results**
Revenues were expected to grow and there was an expectation of reduced corruption.

**Evaluation From The Perspective Of The Stake Holders**
The centralized video monitoring did not work properly because of inadequate band width in the connection. The writing and pattern of license plates is often non-standard and not in compliance with the law. Hence, the license tracking software has not worked properly (only about 35 out of 5,000 numbers were read accurately).
Notwithstanding the implementation difficulties with the new system, the inspection of all vehicles has produced three-fold increase in tax collection over 2 years. Revenue increased from $12 million to $35 million, paying back the total project cost of $4 million in just 6 months. On average, vehicles are cleared in 2 minutes instead of 30 in the manual system. Harassment of truckers continues.

**Key Lessons**
There was unnecessary use of untested technology for close circuit monitoring, digital conversion of analog reading of number plates which eventually did not work and undermined the credibility of the project.

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1 http://www1.worldbank.org/publicsector/egov
2 Institute for Development Policy and Management, The University of Manchester http://idpm.man.ac.uk/
4 http://www1.worldbank.org/publicsector/egov/bhoomi_cs.htm
5 Bhatnagar S and Vyas Nitesh, Gyandoot: community owned rural Internet kiosk,
percentage points to 74%. Nearly 90% intend to use (up by 20%) OPEN in future, while actual users grew to 16% of respondents (up by 5 percentage points). The proportion of satisfied users declined from 56% to 48%, and the proportion of dissatisfied users grew marginally to 9%.

### TABLE-I

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<tr>
<td>Publishing project-wise expenditure, executing agency</td>
<td>Panchayat web sites in Karnataka</td>
<td>Transparency and lower corruption</td>
</tr>
<tr>
<td>Services through rural kiosks Market information, Application Forms, complaints, ecommerce</td>
<td>1000 kiosks in a dozen pilots in India, pilots in Latin America and Africa</td>
<td>Save travel time, lessen corruption, Better negotiating power, increased accountability, and access to markets</td>
</tr>
</tbody>
</table>