

Quantifying and assessing e-Governance

Any spending in a Government program without the measurement of results and impact cannot go on indefinitely. There will always be one stakeholder who will ask for the impact assessment of the investment.



Prof. K. Subramanian
Deputy Director General,
National Informatics Center,
Government of India
ksdir@nic.in

Sameer Sachdeva
Freelance Consultant and Convenor,
e-Gov
sachdeva_sameer@hotmail.com

Why e-Government assessment?

All elected Governments are accountable to people. The elected representatives are accountable to the Parliament and the Executive is accountable to the elected representatives. Any spending in a Government program without the measurement of results and impact cannot go on indefinitely. There will always be one stakeholder who will ask for the impact assessment of the investment. Therefore, the spending on IT and e-Governance in the Government has to be assessed. This is part of the e-governance initiative and audit also plays a pivotal role in this, as audit findings are submitted to the legislative or parliament.

Difficulty in assessment

The process to quantify the results of e-Governance is very difficult. It is difficult to demonstrate the benefits for a given e-Government program. The various factors that lead to the difficulty are:

- multiple services, processes and benefits make it impossible to estimate all the benefits
- intangible benefits are difficult to capture and quantify
- all e-Government Projects are not often aligned to for increased revenue.
- benefits evolve as a greater understanding is gained of the project
- the evolving and changing technology widens the gap
- lack of pressure or will to measure
- high cost for developing a measurement performance system
- no acknowledgements for failures; though successes to be publicized, more important is failure knowledge to be documented and shared.
- lack of adaptation of national standards in measurement parameters and maturity assessment.

Overall e-Government measurement

The first step in e-Governance measurement is the availability of the information infrastructure. It can be assessed in terms of availability of computers, internet access and networks within the Government. The degree of integration of ICT in the government activities for internal purposes (communication, data collection and storage, resource management) should be described. Stress should be laid on critical activities like e-procurement and e-transactions. The Government functioning can be segregated into the leadership that is available for e-governance, the infrastructure, the data systems and the level of preparedness of each Government, and also knowledge sharing of best practices and resolution of conflicts and issues in implementation of e-governance projects.

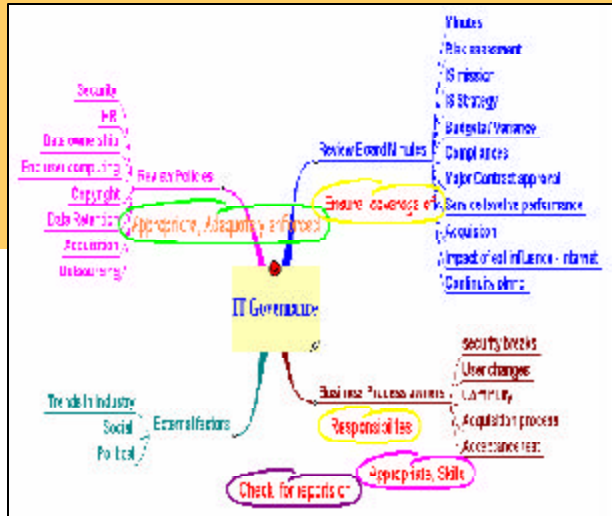
Leadership and awareness

The constituent segments of the government are most instrumental in ensuring the performance of e-governance initiatives in a country. For starters, they include commitment and awareness on the part of political leadership and civil service societies.

Further, the need for a ministry or department of IT, along with fund allocations for education of both the legislature and the bureaucracy is needed. Besides, the number of employees aware of e-governance initiatives and sharing of knowledge pertaining to good practices also contribute to sustenance of e-governance initiatives.

Planning

Right planning with a "Think Globally Act Locally" approach will lead to success of various ICT initiatives and will bring more transparency and accountability in functioning of the Government.



The e-governance information interchange

- IT Policy (including IT Vision)
- roadmap to e-governance with electronic service delivery targets
- right to Information
- standards
- projectisation of IT
- fund Allocation to IT (State, central, external aided, Private participation etc)
- number of Government websites online differentiating static content and dynamic content
- back-end process re-engineering and front-end easy to use;
- usage of system usability concepts and ergonomic design of terminal

Government preparedness

The Government also needs to be prepared for the ICT revolution. In order to carry out e-readiness in various departments. It needs

to document various processes. Carry out GPR and implementation of Government ERP and thereby lead to process re-engineering., and close integration of functional wings.

- percentage documentation of existing processes
- percentage reengineering carried out (GPR)
- percentage of internal process computerized
- percentage of employee records computerized
- percentage of employees trained in IT
- impact analysis and implementation of continuous process re-generation.
- authentication of Information available in the websites

The existence of Government websites and the e-service delivery via these is another

aspect to understand e-readiness in Government. The websites can be analyzed for various aspects like the availability of a website, the quality of the website (design, functionality, navigation). The richness of the information displayed and its relevance for the society at large (be it businesses, other government organizations, NGOs, education sector, individuals). Quality and timeliness of the information displayed (frequency of updating).

Existence of on-line interaction possibilities (emailing, on-line downloadable forms, on-line application, etc) and the degree to which there is a two way communication between the government and its clients. Utilization of websites for procurement notice placement. Utilization of information collection and customization tools (feedback forms, user profiles, log analyzers). The way the websites are managed (outsourced, managed by internal IT departments).

e-Services

- official State/Federal Government websites
- number of completed transactions in existing projects
- cost saving in existing projects
- breadth and Depth of e-Services including feedback corrective and control mechanisms
- sectoral coverage of e-services
- number of Public Services provided electronically
- percentage e-services available in local language
- system usability and ease of use and inclusion of complete audit trails

Infrastructure

This assessment should be the analysis of the way the government uses ICT for external communication and the infrastructure available for the same. It should include the degree of in person or

e-Commerce /e-Governance /e-Security Objectives and Certification Framework

Framework Attributes	Control Theory	COBIT	IT Act	Indian IT Act reference
Effectiveness		★	★	2(1)(zd)(c)
Efficiency		★		
Confidentiality	★	★	★	2(1)(zd)(a)
Integrity	★	★	★	2(1)(zd)(b)
Availability	★	★		
Compliance		★	★	2(1)(zd)(d)
Reliability of information		★		

e-Services objectives and certification framework

paper based communication in the government. The utilization and existence of ICT infrastructure like the telephones, e-mails and faxes. It includes the following:

- percentage of employees having PC/ department
- government Intranet
- groundwork for State/ National Networks
- affordability and reliability- Availability- Serviceability

Data/Info systems

Data systems are the backup support mechanism on which Government is built. The existence of databases will help the Government to give the timely services to the citizens. Mere the existence of application is not enough. Therefore the readiness of Government will imply the readiness of data systems.

- human records computerized
- land records computerized including the spatial component
- number of movable property records (vehicles) computerized
- percentage tax records computerized

Evaluation of e-Projects

The evaluation of e-Projects is another area wherein the impact assessment of e-Governance has to be measurement. Standard models and parameters suitable to each project are to be evolved.

Cost saving

- cutting Administrative cost
- cutting cost of Vigilance & supervision due to increased transparency
- saving on hidden cost like traveling etc
- increase in revenues (unaccounted collections)
- new avenues for taxation

Resource sharing (Human/Capital) thus optimizing the cost of Infrastructure & Implementation

Service transformation

- increased monitoring - reduced bypassing; more compliance of process rules and regulations and accepted best practices
- added value to services
- integrated services
- reduction in power - delegation of power
- optimal centralization and distribution and decentralization

Human resource enhancement

- capacity building (Human Capacity) of public servants
- employment Generation
- increased Awareness of Citizens
- balancing Information content to enable easy consumption catering to absorption ability of Human beings

Dependability and adaptability

- adaptation of users/service providers - by themselves; after training; or not at all
- interoperability
- sustainability

Targets

- achievement of planned goals
- achievement of planned deliverables
- achievements of planned time-lines
- customer Usage (Absolute numbers)
- percentage of transactions carried
- risk exposure (internal, external, and residual risk)
- staff turnover (actual against planned and key staff retained)

Process re-engineering

- backend Integration
- joined up Governance
- state-Centre-local Governments Integration
- CRM/CEM and supply-chain management

Social benefits

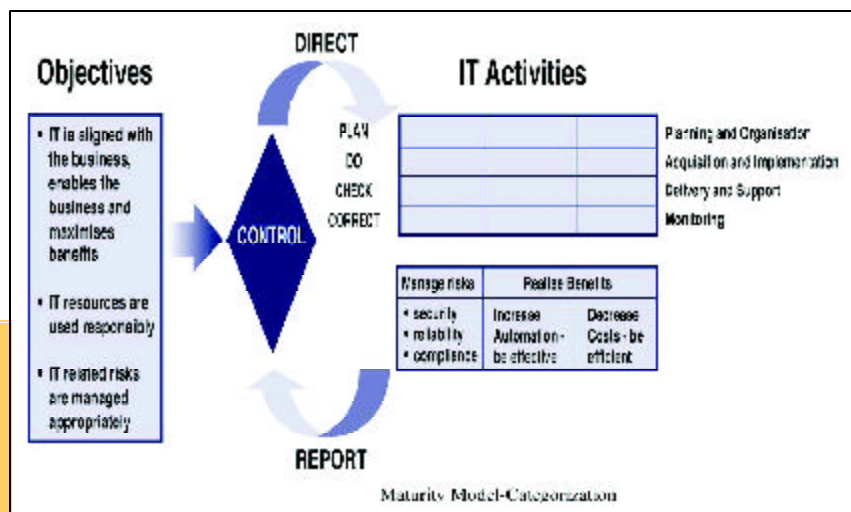
- improved Service Quality
- improved public safety / information
- improved professional development
- increased community skills or knowledge base
- increase government transparency
- increased business opportunities

Methodology for assessment

The challenge in measurement: tangible vs non tangible measurements

As we observe from above that some aspects of e-Government projects may be for tangible benefits such as increasing access, decreasing cycle time, staff reduction and improving service quality. Such benefits can easily be measured and hence can easily be quantified. Although it is difficult to be precise about their actual value, especially in quantitative terms, these intangible benefits could make a significant or critical contribution to the effectiveness or efficiency of an e-Government initiative.

Intangible benefits have to be quantified by evaluation tools such as questionnaires / surveys but, still these are difficult to be transformed into creditable financial or



Maturity model categorisation

physical values. A possible way to measure such benefits is:

- survey among targeted customers
- survey among employees of participating departments
- survey among the private sector partners
- survey among service officers

Failure analysis

Universal desire to benefit from IT, far too many IT projects have failed to meet expectations due to poor fit with the prevailing culture and/or a failure to build culture to support change. IT specialists still tend to seek universal formulae for successful practice, while ignoring or downplaying the messiness of human factors in different environments. IT-enabled business process change efforts should take care of specific cultural attributes that affect the planning and implementation of IT Projects.

Global knowledge and practices and tested prescriptions without local cultural and human interface leave the technology and engineering managers to cope with the cultural issues. The theoretical foundations of SPI approaches specifically (CMM) are rooted in the technical perspectives of Cybernetics and TQM. CMM model has served as a framework for software process and quality improvement efforts in thousands of software organizations and the resources expended on CMM-based SPI are in the billions of dollars. Despite large investments of resources, the failure rate for SPI programs is high—too high. CMM does not effectively deal with the social aspects of organizations. CMM needs more managerial focus. CMM needs to be supplemented with organizational change issues and organizational politics. (Nielsen and Norbjerg) The scale and complexity of organizational change proposed by CMM necessitates a managerial rather than technical approach (AEAN). CMM-SPI lacks awareness of the social nature of organizations; we have strong belief that assumptions about organizational culture embedded in CMM are a fundamental issue. CMM-SPI holds a rational and mechanistic view of the organizations. The risk is the mechanistic view that reduces the software organizations to little more than input-output processes governed by technical rules. The primary objective of

CMM is to achieve "Optimal reputable processes for S/W development. The SPI paradigm is an attempt to change how s/w professionals think and act in their everyday organizational activity. SPI is an intervention in the organizational culture with the objective of changing it... In fact, SPI theory and practice cannot ignore the body of knowledge about organizational culture.

SW-CMM suffers from some internal contradictions as it shares many aspects with the hierarchical culture types; SW-CMM turns gradually hierarchical at higher levels. P-CMM suffers from an additional, significant, main contradiction between the rational and consensual culture forms; SW-CMM and P-XCMM are mutually inconsistent; Both CMMs, P-CMM in particular, express allegiance with the developmental culture form as an end but as a means. To achieve a balance between control and goal orientation on the one hand and change and flexibility on the other hand—between the rational culture and the developmental culture. CMM focuses today on controlling the processes of s/w development leading to level of bureaucratization of s/w organizations that is less flexible than desired. The professional bureaucracy focuses on standardization of skills and indoctrination of the professional. They are based on trust and competence. The need is professionalization of s/w engineering: offering a tradition, standards, and a culture that is well entrenched and recognizable without regard to the particular organization setting.

The translation, metrics, and calibrations

- do the items mean the same thing?
- do respondents react the same way to the same terms?
- are scales and scoring mechanisms are identical?
- what happens when one cultural group is predisposed to score in the centre of the scale, whereas another tends to the extremes?
- construct equivalence (meaning), structural equivalence (operationalization), measurement (identical instruments), and scalar equivalence.
- the understanding of the people the concept meaning of "Trust"

Recommendations

The evaluations so far are based on intricate methodologies that conceal more than what they reveal. The real test of an evaluation process is the collection of data at the grassroots level. The data should be supported by qualitative analysis wherein the real impact of each program needs to be studied. Most of the e-governance initiatives had their impacts on certain pockets of various states and in reality do not really represent the actual state. In India it is said that if Bangalore is taken out of Karnataka, Hyderabad out of Andhra Pradesh, Gurgaon out of Haryana, Noida out of UP (and so on) very less IT will be observed. In fact, measurement is a step later, where Governments need to do things in anticipation wherein they can take the advantage of the development of e-Governance.

The Governments must incorporate the cost-benefit analysis before adopting technology. The inter-departmental coordination must be ensured before taking up a technology solution. There should be clearly defined accountability parameters and a real measure of efficiency should be incorporated. The human aspects of e-governance should be taken care and proper system for their adaptation by all stakeholders should be in place. As regards measurement of the impact on each stakeholder must be studied and the extent of the impact as well must be understood. Each measurement must act as a feedback to the on-going process and improvements must be worked accordingly.

Conclusion

Though from above it may seem that calculating the progress of e-Government projects is a difficult process, but the Governments cannot do away by without accessing the impact. In fact, reach and impact are the two parameters which each project should be evaluated on. In order that the Governments will continue support the projects, they have to show the results and impact of such projects. But as we all we agree and concur that there is still no methodology for establishing the financial costs and benefits of on-line services. The evaluation process of e-government project has to go long way before the projects can be branded as success or failure. ■

