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Performance Measurement for the e-Government Initiatives: A Comparative Study

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Dissertation Approval/Signature Page

We hereby certify that this dissertation, submitted by Willy C. Isaac, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the dissertation requirements for the degree of Doctor of Philosophy.

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An Abstract of a Dissertation Submitted to Nova Southeastern University
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The main objective of performance measurement in public organizations is to support better decision-making by management, leading to improved outcome for the community, and to meet external accountability requirements. There are different performance measurement models to measure the e-Government initiatives and different studies differ in identifying the key factors and measurement indicator. Many measurement instruments take a too simplistic view and focus on measuring what is easy to measure. Much challenge faced by the existing e-Government studies is understanding what citizens, businesses and government agencies wants and how to measure the return on government's Internet investment. Government administrations, international organizations and consultancy firms have done many e-Government benchmarking and performance studies. The results of these studies vary because most of the e-Government studies are assessed from only one perspective of either citizens, businesses or public officials. Issues analyzed by different evaluations lead to different outcomes and give only part of the answer to what is the level of e-Government in a given country or local community.

The main aim of this research was to evaluate the impact of e-Government and its instruments of measurements to develop an e-Government performance measurement framework. The combined research methodology of literature research and case study were chosen to answer the goal of this research. This research analyzed the existing literature on performance measurement models from private and public sector and also the e-Government performance models proposed by many governmental and international organizations. Proposed model was validated with a number of national e-Government Strategies with an illustrative case study approach using documentary analysis.

Many of the performance studies are used as the main determinants of public opinion on e-Government and for developing e-Government strategy, it is very important that, what is being measured is crucial for the further development of e-Government.

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Chapter 1

Introduction

Problem Statement and Goal

Performance measurement can be used to improve the performance of an organization; to improve control and accountability mechanisms; to inform the budget process; and to motivate staff. The main objective of performance measurement in public organizations is to support better decision-making by management, leading to improved outcome for the community, and to meet external accountability requirements.

The landmark Clinger-Cohen Act and the e-Government initiatives under the President's Management Agenda require the use of performance measures to manage and evaluate the success of e-Government initiatives. Despite these requirements, reviews of IT planning and measurement documentation by oversight agencies demonstrate a need for clear, tactical guidance for developing and measuring successful e-Government initiatives (The Performance Institute, 2002).

As per Peters, Janssen and Engers (2004) public administrations all over the world invest an enormous amount of resources in e-Government. How success of e-Government can be measured is often not clear. They also point out that the measurement of the effectiveness of e-Government is a complicated endeavor and measurement focuses primarily on the front (primarily counting the number of services offered) and not on the back-office processes. Interpretation of performance measures is difficult as all existing measurement instruments lack a framework depicting the relationships between the indicators and the use of resources.

Most existing measures are quantitative (e.g., number of websites, decrease in response time to questions, etc.). But few include qualitative measures related to policy and ethics, such as level of satisfaction to citizens with the quality of service, whether privacy policies are included on websites and whether local government officials are aware of the need for privacy protection, etc. Although some efforts are being made to develop metrics, no systematic set of quantitative and qualitative measures have been developed for widespread use (Carbo & Williams, 2004).

Traditional methods of measuring e-Government impact and resource usage fall short of the richness of data required for the effective evaluation of e-Government strategies. A good theoretical framework for measuring the impact of e-Government and the use of resources are still lacking. There are many reports produced on e-Government developments, based on different measurement instruments that used different criteria (Peters et al., 2004).

As per Hu, Xiao, Pang, and Xie (2005) the appraisal of e-Government project success is significant to the healthy development of e-Government. However most of the appraisal models put forward by authoritative organizations are more suitable for the appraisal of the overall development of e-Government, and they are not directly targeted on the problems that exist in e-Government projects.

There are different performance measurement models to measure the e-Government initiatives and different studies differ in identifying the key factors and measurement indicator. Many measurement instruments take a too simplistic view and focus on measuring what is easy to measure.

Without robustly calculated cost and benefits, e-Government implementers will find it extremely difficult to obtain political and public support. It would be beneficial both for both citizens as well as for governments if such a theoretical framework is developed and a standardized measurement instrument become available. This would allow governments and designers to compare different e-Government approaches and learn from them and to become the most competitive in delivering the services. Building on previous studies, and recognizing the need to understand socio-economic and cultural factors this proposed project should provide results that can be adapted for different federal, state and local e-Government initiatives.

Most of the published work on e-Government comes from either (a) Government / Public policy journals or, (b) Government sponsored researches, which are published on respective Government web sites. The kind of work published in Government journals and the Government are of varying measurements. For example, characteristics of a Government web site are measured and related to some perceived measure of satisfaction. In general, no in depth theory is used.

Most of the current studies lack the measurement based on the Mission and Goals of the e-Government initiatives. A search of the prominent IS journals like MIS Quarterly, Information Systems Research, Management Science, Journal of Management Information Systems, Communications of the ACM, International Journal of Electronic Commerce and conferences like Americas Conference on Information Systems (AMCIS), International Conference on Information Systems (ICIS), Hawaii Conference on Systems Sciences (HICSS) does not provide any reference to e-Government performance measurement research.

A review on prominent Government related journals like Public Administration Review, Journal of Public Administration Research and Theory (J-PART), Journal of Government Financial Management, Government Finance Review, Journal of Public Budgeting, Accounting and Finance also does not provide any reference to e-Government performance measurement research.

The purpose of this research is to create a logical connection between Government mission / goals, Government strategy and link them to performance measurement. The main argument is that, if goals are not clear, then the performance measurement may not make much sense.

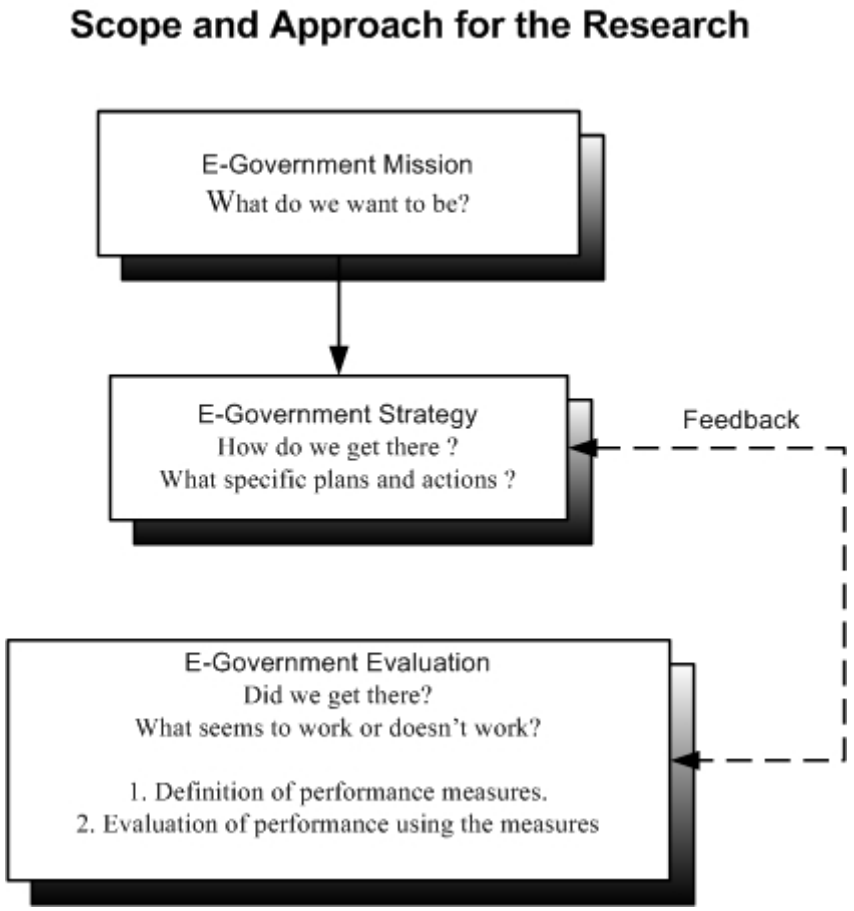

Figure 1. Scope and approach for the research

The dissertation is organized into three essays and specific goals of the research in these three essays are:

a) Examine various e-Government performance measurement models, in the context they were proposed and being used. The study used academic research, government published literature from developed and developing countries and non-profit organizational research to identify existing e-Government benchmarking and performance evaluation studies. First essay discussed existing e-Government performance measurement models and analyzed of their weakness.

b) Examine different performance measurement tools used in private and public sector and how well it tied to e-Government performance measurement. The study compared the constructs and relationships in the limited available research on e-Government models and the vast IS research oriented towards non-government organizations. The second essay discussed private and public sector performance models and their potential application to e-Government.

c) Developed an e-Government framework for performance measurement. Both essays 1 and 2 were used as basic building blocks to develop the proposed e-Government performance measurement framework. The third essay was developed into an e-Government framework for performance measurement based on the study of existing e-Government measurement research and performance measurement literature and research in the private sector.

In order to validate the proposed e-Government framework, following steps were followed.

1. Selected 3 case studies on e-Government projects and described how they went about strategizing the project.
2. Using the strategic information available from the case study, developed performance measurements for the proposed framework.
3. Validated the proposed framework using the selected case studies.

Relevance and Significance

Any unplanned e-Government initiatives often result in very little outcome. It is crucial to identify early on: Who are the intended audience? What would be accomplished through the use of the e-Government? What would be the outcomes for the intended audience experience as a result of their use of the e-Government? Answers to these questions not only help the government to keep the project grounded in the overall programmatic goals and objectives of the organization, but they also can significantly influence the design, maintenance, usage guidelines and outreach activities of the e-Government itself.

Performance measurements provide the groundwork for creating a continuous improvement process that the organizations may use to move towards best practices in accomplishing their missions and advancing organizational objectives. They are not to be used as a test of success or failure, but as an ongoing process to help organizations measure progress towards their goal.

Many organizations jump into building e-Government initiatives without identifying what they hope to accomplish with it. They are so eager to get something up

and running (and often are being pressured by other forces within their organization) that they are hesitant to spend too much time on the planning required to ensure that the best, most appropriate and useful solution are designed and implemented.

Performance measurement is tied into an organization's strategic planning process as a way of measuring the implementation of its goals and objectives derived from an organization's mission. There is a great deal of emphasis on performance measures today as a way of providing accountability and the means to a results-oriented management strategy (Stowers, 2004).

In the private sector, the principal measure of successful performance is profit. Public agencies, on the other hand, have no such universal and widely accepted performance measure of success. For public sector organizations, performance must be judged against the goals of their programs and whether the desired results and outcomes have been achieved. Success is often viewed from the distinct perspectives of the various stakeholders, such as legislatures, regulators, other governmental bodies, vendors, suppliers, customers, and the general public. Therefore, it is extremely important that the measures of performance used by a public organization be created with as much input and consultation from stakeholders as feasible, so as to reach as much consensus as is possible regarding what is expected of the organization (O'Connell, 2000).

As per Arveson (2003) the difference between private sector and public sector goals can be summarized as follows.

Table 1. Private Sector and Public Sector Goals (Arveson, 2003)

Feature	**Private Sector**	**Public Sector**
General Strategic Goals	Competitiveness; uniqueness	Mission success; best practices

Financial Goals	Profit; growth; market share	Productivity; efficiency; value
Stakeholders	Stockholders; buyers; managers	Taxpayers; recipients; legislators
Desired Outcome	Customer satisfaction	Customer satisfaction

The Standish Group study estimates that only 28% of all IT projects in 2000 in the US, in both government and industry, were successful with regard to budget, functionality and timeliness. 23% were cancelled and the remainder succeeded only partially. These significant economic losses comprise not only outright waste in exceeding budgets and abandoned projects, but also lost opportunities for enhanced effectiveness and efficiency. The inability of governments to manage large public IT projects threatens to undermine efforts to implement e-Government. Unless governments learn to manage the risks connected with large public IT projects, these e-dreams will turn into global nightmares (OECD, 2001).

E-government implementers should communicate the impacts and benefits of a program, in order to justify continued political and public support. Assessment should be realistic and done within time frames that are useful to decision-makers. Priority should be given to the assessment of demand, benefits and service quality. Assessing demand remains a major weakness in OECD countries' e-Government programs. As services become more complex and expensive, it is increasingly important to assess this demand and incorporate user feedback. Monitoring and evaluation of results will be an essential tool for policy makers to limit the margins for error when putting future strategies in place (OECD, 2003a).

Achieving results must start with the definitions of success and performance measures. Typically, performance measures include outcome, output, and efficiency measures, because each type of measure provides valuable information about program performance. Collectively, these measures convey a comprehensive story regarding what products and services are being provided, how well it is being accomplished and to what result.

The different measures may fit in the aim of the owners of the e-Governmental services. However, due to conflicting aims and priorities, little agreement exists on a uniform set of measures, needed for comparison of e-Government development. Different stakeholders may come to different interpretations of the status of e-Government. As such the existing instruments provide a picture of the status of e-Government that may not be useful as substitute for deducing the e-Government performance (Peters et al., 2004).

Public sector organizations operate in settings very different from the private sector, and these differences are important for understanding why governments fail and what challenges project managers face. Small policy changes may require major changes in IT structures. Special standards of accountability and transparency apply to the public sector. The time allowed for legislation to come into effect is often much too short for proper IT systems to be built and launched (OECD, 2001).

Current benchmarking studies of e-Government are frequently more than simplistic 'bean-counting' exercise that measures the number of services provided online. These studies focus on the visible interface with users and neglect more complex back office changes, which could be significant in improving the service quality and

efficiency. The benefits arising from e-Government are usually divided into two groups such as (1) Benefits for government, which are primarily based around efficiency gains, obtained by information and communications technologies, (2) Benefits for users, for example citizens and business (Foley, 2005).

Performance measures have been widely used for traditional government services. Clearly, e-Government is vastly different in its delivery modes, its 24/7/365 delivery expectations, and its ease of use. Some traditional performance measures are appropriate for e-Government, but little effort has been made so far in developing the e-Government measures or encouraging governmental agencies to work on them. The topic of e-Government performance measurement is still woefully underemphasized (Stowers, 2004).

The explosive growth of the Internet has transformed the relationship between customers and businesses. It is also transforming the relationship between citizens and Government. By enabling individuals to penetrate the Federal bureaucracy to get access to information and transact business, the internet promises to shift power from a handful of leaders in Washington to individual citizens (Booz Allen Hamilton, 2002).

The gap between what customers want and what services are provided is the likely catalyst for customer dissatisfaction, declining revenue streams and ultimately business failures. The digital age has brought with it a fundamental change in both business and government based on the availability and accessibility of information and services, as well as changing customer expectations.

Information provided by performance measurement is just part of the information that managers and policy officials need to make decisions. Performance measurement

must often be coupled with evaluation data to increase our understanding of why results occur and what value a program adds. Performance measurement cannot replace data on program costs, political judgments about priorities, creativity about solutions, or common sense. A major purpose of performance measurement is to raise fundamental questions and the measures by themselves seldom provide definitive answers (Office of Management and Budget, 2005).

Study done by Performance Institute on Creating A Performance-Based Electronic Government (2002) identified the leading practices that enhance the success of the IT projects as Stakeholder Input, Budget Justification / Capital Planning, Program Management, Partnership / Acquisition Strategy, Alternatives / Risk Analysis, Enterprise Architecture, IT Privacy/Security.

The Accenture Public Sector Value Model was developed to address the challenge the agencies face in developing a meaningful baseline for measuring performance and performance improvements. It proposes a more complete approach to measuring successful actions and provides a process for tracking progress over time (Jupp & Youn, 2004).

Study by McClure, Sprehe, and Eschenfelder (2000) on Performance measures for federal agency web sites identified that federal agency website evaluation and development of performance measures are in its infancy and much work lies ahead in designing, testing, implementing evaluation methods and measures. The key measurement indicators identified by the study are Inputs and Efficiency, Effectiveness, Outputs, Extensiveness, Service Quality, Impact, Usefulness and Adoption.

Study by the Federal Enterprise Architecture Program Management Office on performance model identified the three main purposes (1) Help produce enhanced IT performance information to improve strategic and daily decision making, (2) Improve the alignment and better articulate the contribution of IT to business outputs and outcomes, thereby creating a clear line of sight to desired results, and (3) Identify performance improvement opportunities that span traditional organizational structures and boundaries (Federal Enterprise Architecture Program Management Office, 2003).

Canada's government on-line report measures progress towards expected outcomes for the GOL initiative, including: (1) increased citizen and client focus through convenient on-line service delivery, (2) better service quality through the availability of a critical mass of on-line services, (3) increased trust and confidence in on-line service delivery through good security and privacy safeguards, and (4) positive economic impacts through greater efficiency in service delivery and innovative services (Treasury Board of Canada, 2004).

Study by Stowers (2004) was based on information technology or e-Government strategic plans on the information technology office websites of all the states and District of Columbia and on the sites of the 25 largest cities in the country, categorized the e-Government performance measures as web or technology-based measures or measures related to the specific services provided.

The ACSI model is a set of causal equations that link customer expectations, perceived quality, and perceived value to customer satisfaction. The ASCI model used to measure satisfaction with government agencies is identical to the private-sector model, except the component in the private-sector model concerning price and "repurchase"

intentions has been adjusted for the public sector (American Customer Satisfaction Index, 1994).

Leading-edge organizations, whether public or private, use performance measurement to gain insight into, and make judgments about, the effectiveness and efficiency of their programs, processes, and people. These organizations decide on what indicators they will use to measure their progress in meeting strategic goals and objectives, gather and analyze performance data, and then use these data to drive improvement in their organization and successfully translate strategy into action (O'Connell, 2000).

Performance measurement can be defined as measurement on a regular basis of the results (outcomes) and efficiency of services or programs. Public sector performance measures are typically quantitative ways of determining the resources that go into providing services (input measures), the immediate results of those services (output measures), and the long term results of providing those services (outcome measures) (Stowers, 2004).

The current approaches do not support a comprehensive c-government assessment. The partial evaluations cannot give policy makers evaluation elements for their decisions especially in the direction of transformative government, characterized by integrated services development (Kunstelj & Vintar, 2004).

Table 2. Selected Examples of Remarks for e-Government Measurements Studies

Study / Authors	e-Government Measurement Remarks
Peters, R. M., Janssen, M., & Engers, T. M. v. (2004)	Measurement focuses predominantly on the front (primarily counting the number of services offered) and not on the back-office processes.
Carbo, T., & Williams, J. G. (2004)	Most existing measures are quantitative (e.g., number of websites, decrease in response time to questions, etc.) and few include qualitative

	measures related to policy and ethics. No systematic set of quantitative and qualitative measures has been developed for widespread use.
Hu, Y., Xiao, J., Pang, J., & Xie, K. (2005)	The appraisal of e-Government project success is significant to the healthy development of e-Government, however most of the appraisal models put forward by authoritative organizations are more suitable for the appraisal of the overall development of e-Government, and they are not directly targeted on the problems that exist in e-Government projects.
O'Connell, I. A. (2000).	In the private sector, the principal measure of successful performance is profit. Public agencies, on the other hand, have no such universal and widely accepted performance measure of success.
OECD. (2003)	Assessing demand remains a major weakness in OECD countries' e-Government programs. Monitoring and evaluation of results will be an essential tool for policy makers to limit the margins for error when putting future strategies in place.
Foley, P. (2005)	Current benchmarking studies of e-Government are frequently more than simplistic 'bean-counting' exercise that measures the number of services provided online. These studies focus on the visible interface with users and neglect more complex back office changes, which could be significant in improving the service quality and efficiency.
Stowers, G. N. L. (2004)	Little effort has been expended so far in developing the e-Government measures or encouraging governmental agencies to work on them. The topic of e-Government performance measurement is still woefully underemphasized.
McClure, C. R., Sprehe, T., & Eschenfelder, K. (2000)	Federal agency website evaluation and development of performance measures is in its infancy and much work lies ahead in designing, testing, and implementing evaluation methods and measures.

Barriers and Issues

Even though the academic research and government literature have done much work on the performance measurements in public sector, e-Government performance measurement is still under emphasized. Many e-Government performance measures mirror the traditional public sector performance measures such as input, output and outcome. Some e-Government performance measurement studies look at the quantitative measures such as number of websites, decrease in response time to questions, etc. Some studies include qualitative measures related to policy and ethics, like level of satisfaction to citizens with the quality of service, whether privacy policies are included on websites

and whether local government officials are aware of the need for privacy protection, etc. Current research uses different methodologies, present results in different ways. It does not usually distinguish between costs and benefits of the government & users and rarely consider other accompanying organization changes.

The study proposed a comprehensive understanding of the benefits, costs and drivers for the success for e-Government initiatives. Study also proposed an e-Government performance measurement model based on the evaluation of impact, benefit and beneficiaries.

This study was focused on the e-Government initiative of USA, UK, Australia and New Zealand as example of developed countries and India as example of developing country. The study was based on existing government and academic research literature and not based on actual data collection.

Limitations

Research did review existing relevant information regarding performance data quality where available, but did not systematically assess the quality of the performance information used in the examples cited. Proposed e-Government performance measurement framework describes how performance can be measured and used to make decisions, but did not attempt to verify that its use, ultimately resulted in improved outcomes. The study was not designed to be an impact evaluation, including both an experimental and control group of e-Government stakeholders.

The study did not take into consideration the stakeholders actual needs of its citizens in different countries. The different countries may have different wants and needs

for e-Government development and priorities. Study did not provide a breakdown of performance measurement for any specific stakeholder groups like citizens, business, employees or government agencies.

The study did not differentiate the priorities of individual countries while taking into consideration in proposing the framework. Study did not take into account the maturity of the Information and Communication Technologies of individual countries or its capacity for the development of e-Government services.

The proposed e-Government performance measurement framework is validated using three case studies and is not based on actual implementation or prototype results or on actual data collection. Further study can be conducted to validate the framework in other developing countries and also under-developed countries where e-Government is still in infancy.

Definition of terms

The following terms relevant to this research are collected from multiple sources as part of the literature review. The sources include references such as (Baldrige National Quality Program, 2007a), (OECD, 2003b) and (United Nations Development Programme, 2002)

Table 3. Definition of Terms

Activity	Actions in the context of the project which are both necessary and sufficient, and through which inputs (financial, human, technical and material resources) are mobilized to produce specific outputs or contribute to the outcome.
Action Plans	Specific actions that respond to short- and longer-term strategic objectives. Action plans include details of resource commitments and time horizons for accomplishment. Action plan development represents the critical stage in planning when strategic objectives and goals are made specific so that effective, organization wide understanding and deployments are possible.

Back Office	Refers to internal operations of an organization that support core processes and are not accessible or visible to the general public.
Benchmarks	A standard or point of reference used in measuring and/or judging quality or value. Benchmarks are processes and results that represent best practices and performance for similar activities, inside or outside an organization's industry. Benchmarks are one form of comparative data. Other comparative data organizations might use include industry data collected by a third party (frequently industry averages), data on competitors' performance, and comparisons with similar organizations in the same geographic area or that provide similar products and services in other geographic areas.
Benchmarking	The process of continuously comparing and measuring an organization against business leaders anywhere in the world to gain information that will help the organization take action to improve its performance.
Channels	A means of accessing services (e.g. Internet, telephone, visit to a government office, e-mails, Postal mailing). Different types of customers use different service access channels.
Customer	Actual and potential users of your organization's products, programs, or services. Customers include the end users of your products, programs, or services, as well as others who might be their immediate purchasers or users. These others might include distributors, agents, or organizations that further process your product as a component of their product.
e-Government	Use of information and communication technologies (ICTs), and particularly the Internet, as a tool to achieve better government.
e-Government Activities	Broadly used to cover all activities relating to the use of ICTs by governments. It thus covers both an agency's activities with regard to citizens, businesses and other public agencies, as well as activities concerning internal administration processes, structures and behavior. It covers both 'passive' access to information upon demand from citizens and 'active' measures by government to disseminate information to citizens.
Effective	How well a process or a measure addresses its intended purpose. Determining effectiveness requires (1) the evaluation of how well the approach is aligned with the organization's needs and how well the approach is deployed or (2) the evaluation of the outcome of the measure used.
Front Office	Government as its constituents see it, meaning the information and service providers, and the interaction between government and both citizens and business.
Goals	A future condition or performance level that one intends to attain. Goals are ends that guide actions. Goals can serve many purposes, including clarifying strategic objectives and action plans to indicate how you will measure success, fostering teamwork by focusing on a common end, providing a basis for measuring and accelerating progress. Goals can be both short and longer-term.
Governance	System of management and controls exercised in the stewardship of your organization. It includes the responsibilities of your organization's owners/shareholders, board of directors, and senior leaders. Describe how your organization will be directed and controlled to ensure (1) accountability to owners/shareholders and other stakeholders, (2) transparency of operations, and (3) fair treatment of all stakeholders. Ensuring effective governance is important to stakeholders' and the larger society's trust and to organizational effectiveness.
Impact	Positive and negative long-term effects on identifiable population groups

	produced by a development intervention, directly or indirectly, intended or unintended. These effects can be economic, socio-cultural, institutional, environmental, technological or of other types. Impact is the longer term or ultimate result attributable to a development intervention, in contrast to output and outcome, which reflect more immediate results from the intervention.
Input	A means mobilized for the conduct of program or project activities, i.e., financial, human and physical resources. Amount of resources actually used to produce outputs and outcomes.
Information technology (IT)	Is defined as any equipment or interconnected system (subsystem) of equipment that includes all forms of technology used to create, store, manipulate, manage, move, display, switch, interchange, transmit or receive information in its various forms. Information can be in the form of: business data; voice conversations; still images; motion pictures; multimedia presentations and other forms including those not yet conceived.
Information and communications technology (ICT)	Refers to both computer and communication technology. The meaning of communication refers to a system of shared symbols and meanings that binds people together into a group, a community, or a culture.
Indicators	When the measurement relates to performance but is not a direct measure of such performance (e.g., the number of complaints is an indicator of dissatisfaction but not a direct measure of it) and when the measurement is a predictor ("leading indicator") of some more significant performance (e.g., increased customer satisfaction might be a leading indicator of market share gain).
Initiatives	The specific programs, activities, projects or actions an organization will undertake in an effort to meet performance targets.
Key	The major or most important elements or factors, those that are critical to achieving your intended outcome. They are the essential elements for pursuing or monitoring a desired outcome.
Key performance indicator	Measurable factor of extreme importance to the organization in achieving its strategic goals, objectives, vision, and values that, if not implemented properly, would likely result in a significant decrease in customer satisfaction, employee morale, and effective financial management.
Lagging Indicator	Performance measures that represent the consequences of actions previously taken. They frequently focus on results at the end of a time period and characterize historical performance. Sales may be considered a lag indicator.
Leading Indicator	Performance measures which are considered as drivers of lagging indicators. There is an assumed relationship between the leading and lagging indicators, which suggests that improved performance in a leading indicator will drive better performance in the lagging indicator. For example, spending more time with valued customers (a leading indicator) is hypothesized to drive improvements in customer satisfaction (a lagging indicator).
Measures	Numerical information that quantifies input, output, and performance dimensions of processes, products, programs, projects, services, and the overall organization (outcomes). A standard used to evaluate and communicate performance against expected results. Measures are normally quantitative in nature capturing numbers, dollars, percentages, etc. Reporting and monitoring measures helps an organization gauge progress toward effective implementation of strategy.
Measure	One of several measurable values that contribute to the understanding and

	quantification of a key performance indicator. A standard used to evaluate and communicate performance against expected results. Measures are normally quantitative in nature capturing numbers, dollars, percentages, etc. Reporting and monitoring measures helps an organization gauge progress toward effective implementation of strategy.
Metrics	The elements of a measurement system consisting of key performance indicators, measures, and measurement methodologies.
Mission	An enduring statement of purpose; the organization's reason for existence. The mission describes what the organization does, who it does it for, and how it does it. The mission answers the question, "What is this organization attempting to accomplish?" The mission might define customers or markets served, distinctive or core competencies, or technologies used. Effective missions are inspiring, long-term in nature, and easily understood and communicated.
Objective	A concise statement describing the specific things an organization must do well in order to execute its strategy. Objectives often begin with an action verbs such as increase, reduce, improve achieve, etc.
Online government services	Services provided by, but not necessarily supplied by, the public administration to citizens, businesses and organizations as well as to other public administration units through information networks.
Outcome	An outcome refers to the intended or achieved short-term and medium-term effects of an intervention's outputs, usually requiring the collective effort of partners. Outcomes represent changes in development conditions which occur between the completion of outputs and the achievement of impact. Outcomes are the events, occurrences or changes in condition, behavior, or attitude that indicate progress toward achievement of the mission and objectives of the program. Outcomes are linked to program's overall mission. Outcomes are not what the program itself did but the consequence of what the program did.
Outputs	Output information indicates the amount of product and services delivered (completed) during the reporting period. Outputs by themselves tell anything about the results achieved, although they are expected to lead to desired outcomes.
Performance	Output results and their outcomes obtained from processes, products, and services that permit evaluation and comparison relative to goals, standards, past results, and other organizations. Performance can be expressed in nonfinancial and financial terms.
Performance Indicator	A particular characteristic or dimension used to measure intended changes defined by an intervention. Performance indicators are used to observe progress and to measure actual results compared to expected results. They serve to answer "how" or "whether" a unit is progressing towards its objectives, rather than "why" or "why not" such progress is being made. Performance indicators focus on outcomes, objectives and goals while process indicators, are simply an accounting of the results of individual project activities.
Performance management	The use of performance measurement information to help set agreed-upon performance goals, allocate and prioritize resources, inform managers to either confirm or change current policy or program directions to meet those goals, and report on the success in meeting those goals.
Performance measure	A quantitative or qualitative characterization of performance. The indicators used to measure the performance of policies, programs and processes.

Performance measurement	A process of assessing progress toward achieving predetermined goals, including information on the efficiency with which resources are transformed into goods and services (outputs), the quality of those outputs (how well they are delivered to clients and the extent to which clients are satisfied) and outcomes (the results of a program activity compared to its intended purpose), and the effectiveness of government operations in terms of their specific contributions to program objectives.
Performance goal	A target level of an activity expressed as a tangible measurable objective, against which actual achievement can be compared.
Portal	A dedicated service that co-ordinates and presents information and services from different, independent suppliers into one interface, typically a web site. The information is categorized in accordance with given criteria related to users' needs.
Process	Linked activities with the purpose of producing a product or service for a customer (user) within or outside the organization. Generally, processes involve combinations of people, machines, tools, techniques, materials, and improvements in a defined series of steps or actions. Processes rarely operate in isolation and must be considered in relation to other processes that impact them.
Results	Outputs and outcomes achieved by an organization in addressing the requirements of the organization. Results are evaluated on the basis of current performance; performance relative to appropriate comparisons; the rate, breadth, and importance of performance improvements; and the relationship of results measures to key organizational performance requirements. There are three types of results (intended or unintended, positive and/or negative) which can be set in motion by a development intervention – its output, outcome and impact.
Results Based Management	A management strategy or approach by which an organization ensures that its processes, products and services contribute to the achievement of clearly stated results.
Stakeholders	All groups that are or might be affected by an organization's actions, success, have an interest in or expectation of the organization. Usually stakeholders can either have an effect on or are affected by an organization. Examples of key stakeholders might include customers, the workforce, partners, collaborators, governing boards, stockholders, donors, suppliers, taxpayers, regulatory bodies, policy makers, funders, and local and professional communities.
Strategy	Describes the differentiating activities an organization pursues to gain competitive advantage. All performance measures should align with the organization's strategy.
Strategic Objectives	A broad time-phased measurable accomplishment required to realize the successful completion of a strategic goal and what an organization must achieve to remain or become competitive and ensure long-term sustainability. Organization's articulated aims or responses to address major change or improvement, competitiveness or social issues, and business advantages.
Strategic goal	A long-range change target that guides an organization's efforts in moving toward a desired future state.
Target	Represents the desired result of a performance measure. Targets make meaningful the results derived from measurement and provide organizations with feedback regarding performance.

Trends	Numerical information that shows the direction and rate of change for an organization's results. Trends provide a time sequence of organizational performance.
Value	The perceived worth of a product, service, process, asset, or function relative to cost and to possible alternatives. Organizations frequently use value considerations to determine the benefits of various options relative to their costs, such as the value of various product and service combinations to customers. Organizations need to understand what different stakeholder groups' value and then deliver value to each group. This frequently requires balancing value for customers and other stakeholders, such as your workforce and the community.
Values	The guiding principles and behaviors that embody how your organization and its people are expected to operate. Values reflect and reinforce the desired culture of an organization. Values support and guide the decision making of every workforce member, helping the organization accomplish its mission and attain its vision in an appropriate manner. Examples of values might include demonstrating integrity and fairness in all interactions, exceeding customer expectations, valuing individuals and diversity, protecting the environment, and striving for performance excellence every day.
Vision	Desired future state of your organization. The vision describes where the organization is headed, what it intends to be, or how it wishes to be perceived in the future. Effective visions provide a word picture of what the organization intends ultimately to become in the future. Vision provides the basis for formulating strategies and objectives.

Resources

Literature resources for the study were collected from college library databases, research publications and web sites relevant to the study. Different nation's e-Government web portals were used to collect the e-Government strategic plans and performance measurement information. Private and nonprofit organizations web sites were also examined for e-Government benchmark and performance studies. Guidance of Advisor was also used as a source for this study because of his research knowledge on the subject. Researcher had a chance to work with a US state agency in developing e-Government strategy. The professional work experience of researcher has also contributed to this study.

Summary

Traditional methods of measuring e-Government impact and resource usage fall short of the richness of data required for the effective evaluation of e-Government strategies. Performance measurement is tied into an organization's strategic planning process as a way of measuring the implementation of its goals and objectives derived from an organization's mission. Most of the current studies lack the measurement based on the Mission and Goals of the e-Government initiatives.

The current approaches do not support a comprehensive c-government assessment. The partial evaluations cannot give policy makers evaluation elements for their decisions. e-Government performance measurement results will be an essential tool for policy makers to limit the margins of errors when putting future strategies in place.

There are different performance measurement models to measure the e-Government initiatives and different studies vary in identifying the key factors and measurement indicator. Many of the existing e-Government measurement and benchmarking studies are based on different definitions of what is being measured.

It would be beneficial for both the policy makers as well as for the stakeholders if an e-Government performance measurement framework is developed and a standardized measurement instrument becomes available. This would allow policy makers and designers to compare different e-Government approaches and learn to become the most competitive in delivering the services.

Chapter 2

e-Government and Performance Measurements Studies

In this chapter, I wish to examine and discuss some of the prominent literatures on e-Government, measuring e-Government and review a few of the measuring instruments that were developed to measure progress in e-Government.

Definitions of e-Government

The term e-Government is also known by different synonyms which include Electronic Government, Electronic Governance, Digital Government, Online Government, e-Gov etc. (Grönlund, 2004, p. 1) . There are many definitions for the term e-Government and differences reflect the priorities in the government strategies (OECD, 2003a, p. 23).

McClure, Sprehe, and Eschenfelder (2000) gave their definition to electronic government as government's use of technology, particularly Web-based Internet applications, to enhance the access to and delivery of government information and service to citizens, business partners, employees, other agencies, and government entities.

United Nations Division for Public Economics and Public Administration (2001, p. 1) specified the e-Government as utilizing the internet and the world-wide-web for delivering government information and services to citizens. e-Government can include virtually all information and communication technology (ICT) platforms and applications in use by the public sector.

E-governance is the use of the most innovative information and communication technologies of the public sector, like the internet, to deliver to all its citizens improved services, reliable information and greater knowledge. This gives to access to the

governing process and encourage greater citizen participation (United Nations Division for Public Economics and Public Administration, 2001, p. 54).

Table 4. The Framework of E-Governance (United Nations Division for Public Economics and Public Administration, 2001, p. 54)

e-Government: Inter-organizational relationships	**e-Administration:** Intra-organizational relationships	**e-Governance:** Interaction between citizens, government organizations, public and elected officials
Policy coordination	Policy Development	Democratic Process
Policy Implementation	Organizational Activities	Open Government
Public Service Delivery	Knowledge Management	Transparent Decision-Making

Pacific Council on International Policy (2002, p. 6) identifies e-Government as the uses of ICT to creates more efficient and effective government. It provides more accessible government services, allows greater public access to information, and there by makes government more accountable to its citizens. e-Government utilizes delivery of services via the Internet, telephone, community centers, wireless devices or other communications systems.

The Performance Institute (2002, p. 14) defines Citizen-centered e-Government as initiatives strategically employing information technology to provide government products or services to intended users resulting in enhanced value. Enhanced value is characterized as improved cost efficiencies, enhanced quality and availability of product and/or service, shorter timeliness, better accessibility, and greater mission achievement

Office of Management and Budget (2002, p. 4) identifies four key categories of customer groups that interact with government agencies and provide opportunities to transform delivery of e-Government services. They are:

- Government to Citizen (G2C): Individuals accessing services or information
- Government to Business (G2B): Organizations accessing services or information
- Government to Government (G2G): Partner government agencies accessing services or information or integrating services across agency organizational boundaries through technologies.
- Internal Efficiency and Effectiveness (IEE): Make better use of modern technology to reduce cost and improve quality of government agency administration, by using industry's best practices.

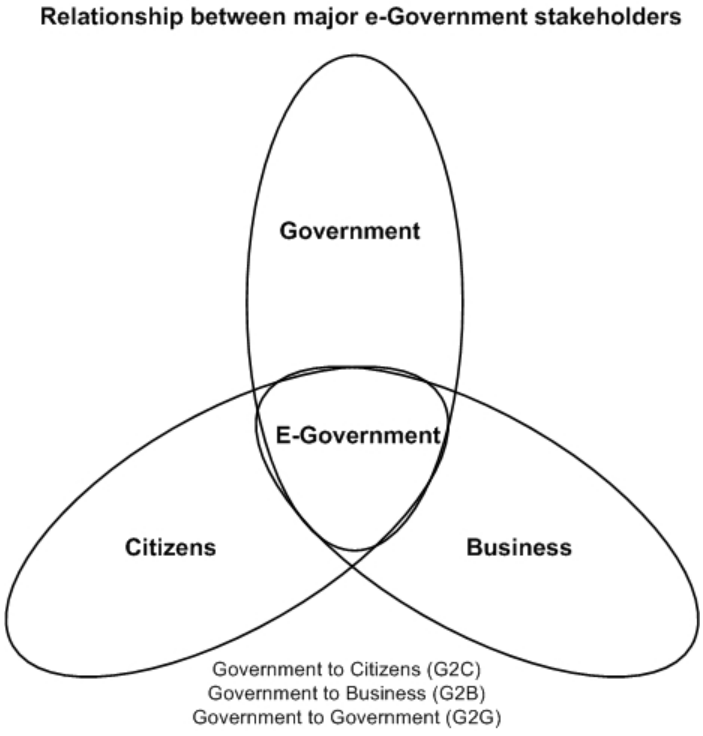

Figure 2. Relationship between major e-government stakeholders

OECD (2003a, p. 23) classified the e-Government as the use of information and communication technologies, particularly the Internet, as a tool to achieve better government.

According to Intergovernmental Advisory Board (2003, p. 5) e-Government is the use of technology, particularly Web-based Internet applications, to enhance the access to and to delivery of government information and services to its citizens, business partners, employees, agencies, and other entities. e-Government assures its government sponsors a powerful tool for improving processes and communicating with the rest of the world. However, the real value of an e-Government program is in the benefits it delivers to the public, and the new avenues it opens to create value.

Public service functions can have immense value in terms of delivering services to citizens, law enforcement, public safety, and health. The value may or may not be reflected in financial terms. The use of e-Government can be an important tool of democratic governance, facilitating the transparent, two-way open communication that makes government-of-the-people possible (Intergovernmental Advisory Board, 2003, p. 6).

e-Government is unique with respect to e-commerce. The citizens using government sites are different from individuals using e-commerce sites. The nature of service provided by the government web site (such as issuing a drivers license) operates without competition or market considerations (Wang, Bretschneider, & Gant, 2005, p. 3).

The European Commission DG Research (2006) defined e-Government as the use of information and communication technology in public administrations combined

with organizational changes and new skills in order to improve public services and democratic processes and strengthen support to public policies.

Guiding Principles of e-Government

The guiding principles that should be observed in choosing leaders of e-Government are clearly laid down in The Council for Excellence in Government (2000, p. 5). The leading principles are:

- Easy to use, connecting people with federal, state, regional, local, tribal, and international governments according to their preferences and needs.
- Available to everyone, at home, at work, in schools, in libraries and other convenient community locations.
- Private and secure, with the appropriate standards for privacy, security, and authentication generating trust required for e-Government to grow and serve the public.
- Innovative and results-oriented, emphasizing speed and harnessing the latest advances in technology.
- Collaborative, with solutions developed collectively and openly among public, private, nonprofit organization, and research partners, on the basis of their experience and expertise.
- Cost-effective, through strategic investments that produce significant long-term efficiencies and savings.
- Transformational, harnessing technology through personal and organizational leadership to change the way government work, rather than merely automate existing practices.

One of the five key elements in the President's Management Agenda and Performance Plan for 2001 was electronic government (2002, p. 3).

The e-Government vision is guided by three principles:

- Citizen-centered, not bureaucracy-centered
- Results-oriented
- Market-based, actively promoting innovation

Pacific Council on International Policy (2002, p. 8) outlines the broad categories of e-Government Vision and goals that are commonly pursued by societies, as follows.

- improving services to citizens
- improving the productivity (and efficiency) of government agencies
- strengthening the legal system and law enforcement
- promoting priority economic sectors
- improving the quality of life for disadvantaged communities
- strengthening good governance and broadening public participation

The second World Public Sector Report by United Nations (United Nations, 2003) stresses that even in today's Information and Communication Technology (ICT) rich environment, it will not be ICT by itself that redirects and re-shapes the functions of governments and makes them somehow different or better. The report outlines the guiding principles for successful e-Government as follows.

Table 5. Guiding Principles for Successful E-government (United Nations, 2003)

Compelling reasons for the government to use ICT in its operations and to go on line	Priority development needs that require government involvement	E-government applications are best embedded in areas that are perceived as closely related to the priority development needs of the society.
	Efficiency and effectiveness as key success criteria of government involvement	The link between ICT applications, optimization of government operations and achievement of important social development goals is a very convincing argument for continued development of e-Government.

Ability of the government to use ICT in its operations: to go and stay on line	Availability of (initial) funding	Whenever advisable and feasible, funding should be treated as a business investment and carry expectation of returns.
	Skills and culture of the civil service	Civil servants must be able and willing to support e-Government, must be eager to learn and change.
	Co-ordination	Co-ordination within and between government agencies must be ironed out before any e-Government application goes on line to avoid duplication, assure interoperability and meet the expectations of users.
	Legal framework	E-government introduces unique legal requirements and these should be realized and faced early on.
	ICT infrastructure	Infrastructure needs should be assessed against the background of requirements and desired results of planned e-Government development.
	Political leadership and long-term political commitment	The chief executive officer of the public sector must be committed to e-Government, lead and build broad support for it.
	Public engagement	This should be reinforced by actively, genuinely and continuously soliciting people to participate in the development of e-Government applications so that these are custom-crafted to the way people live and work.
	Plans for development of human capital and technical infrastructure	There should be a vision and plans for closing the existing divides in skills and access.
	Partnerships	The government should see business firms and civil society organizations as its partners in securing financial resources, skills improvement, better access and adequate capacity to service the ICT network.
	Monitoring and evaluation	Setting clear responsibilities and realistic benchmarks for e-Government development, as well as for their transparent monitoring, is an important ingredient for eventual success.
Compelling reasons for the users of e-Government to go and stay on line	Perception of added value	Any design of e-Government development must incorporate a calculation of the added value that the application intends to bring to individual users.
	Access and skills	It should be made easy in terms of time, cost and effort for the potential users of e-Government to actually employ it.

	Privacy and security	Security and privacy concerns must be addressed early on, openly and with demonstrated professional aptitude.

e-Government research by OECD (OECD, 2003a) titled "The e-Government Imperative" outlined the guiding principles for successful e-Government.

Table 6. Guiding Principles for Successful e-Government (OECD, 2003a)

Vision / political will	Leadership and Commitment	Leadership and commitment, at both political and administrative levels, are crucial to establish visions and plans for the future.
	Integration	E-government needs to be integrated into broader policy and service delivery goals, broader public management reform processes and broader information society activity.
Common frameworks / co-operation	Inter-agency collaboration	E-government is most effective when agencies work together in customer-focused groupings of agencies.
	Financing	ICT spending, where appropriate, needs to be treated as an investment, with consideration of projected streams of returns.
Customer focus	Access	Many advantages of online government information and services are not replicable offline, so that those who lack access will be excluded unless action is taken.
	Choice	Customers should have choice in the method of interacting with government, and the adoption of online services should not reduce choice.
	Citizen engagement	E-government information and services should be of high quality and engage citizens in the policy process.
	Privacy	E-government should not be delivered at the expense of established expectations of privacy protection, and should be approached with the goal of protecting individual privacy.
Responsibility	Accountability	E-government can open up government and policy processes and enhance accountability.
	Monitoring and evaluation	Identifying the demand, costs, benefits and impacts of e-Government is crucial if momentum is to be sustained. e-Government implementers cannot expect support if they can-not articulate potential benefits.

Table 7. Factors Impeding an Enabling e-Government Environment in Developing Countries (United Nations Division for Public Economics and Public Administration, 2001, p. 22)

Core Factors	Symptoms	Consequences
Institutional Weakness	Insufficient Planning, Unclear Objectives	Inadequately Designed Systems, Cost Over-runs
Human Resources	Shortage of Qualified Personnel, Lack or Professional Training	Insufficient Support, Isolation from sources of technology
Funding Arrangements	Underestimated Project Costs, Lack of recurring expenditure	Unfinished Projects, Higher Maintenance Costs
Local Environment	Lack of Vendor representation, Lack of back-up systems / parts	Lack of qualified technical support, Implementation Problems
Technology and Information Changes	Limited Hardware / Software, Inappropriate software	System Incompatibility, Over-reliance on Customer Applications

The Stages of e-Government

The aims of e-Government are not only the transformation of traditional information into bits and bytes and making it accessible via the Internet and moving existing government functions to an electronic platform. But it also calls for rethinking ways the government functions are carried out today in order to improve processes and integration.

The studies include research work done by Gartner Research (2000) , United Nations (2001), Layne and Lee (2001) and World Bank (2002). From these studies, it is clear that e-Government involves multiple stages or phases of development and is not a one-step process.

Gartner Study - Four Phases of e-Government

To measure progress for e-Government initiatives and to establish a road map to achieve the desired levels of constituency service Gartner research (2000) study titled "Gartner's Four Phases of e-Government Model" classifies e-Government into four distinct phases. This can serve as a reference to position where a project fits in the overall evolution of an e-Government strategy.

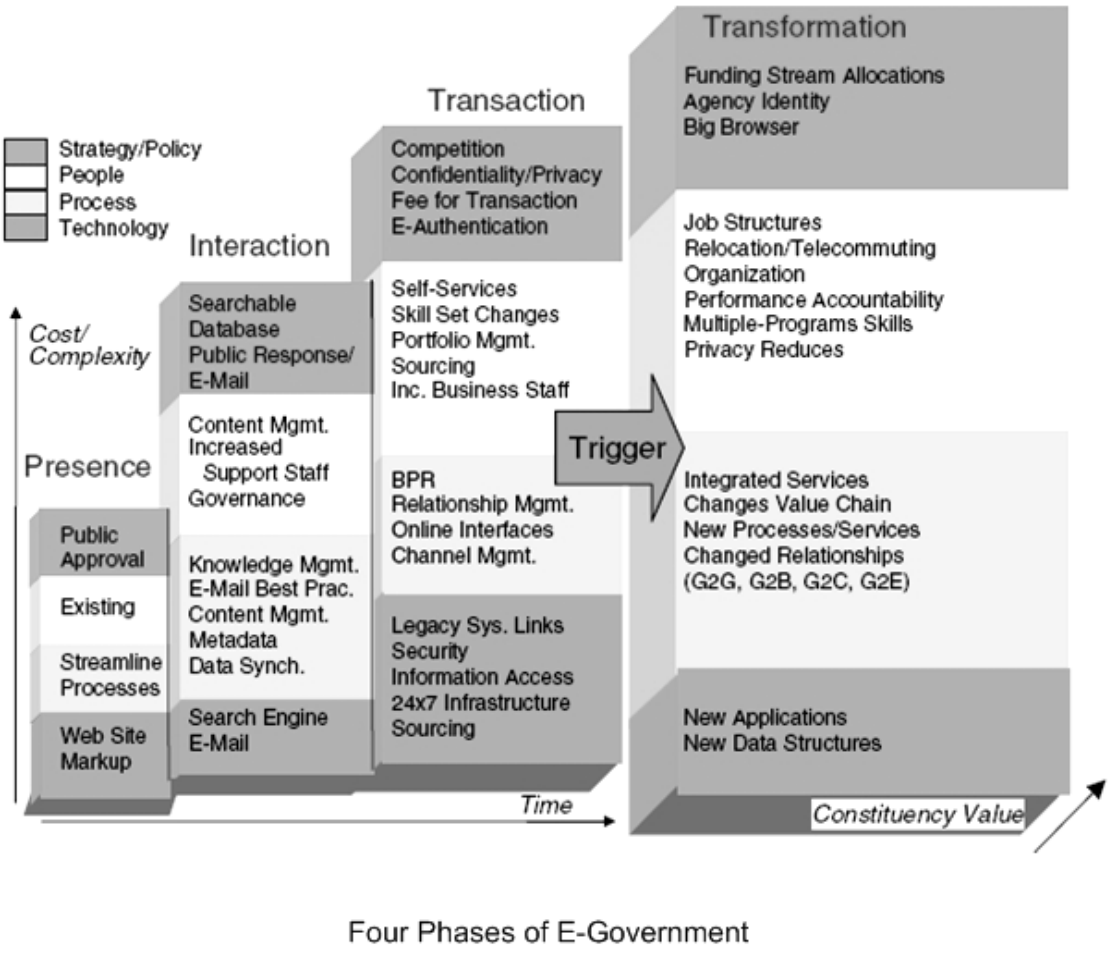

Figure 3. Four phases of e-Government (Gartner Research, 2000)

- **Presence:** This stage is classified by a simple information-providing Web site of a passive nature, sometimes described as "brochureware," indicating the same level of functions as a paper brochure.
- **Interaction:** The interaction stage offers simple interactions between government and citizen (G2C), government to business (G2B), or government agency to government agency (G2G). Interaction stage Web sites provide e-mail contact and interactive forms that generate informational responses.
- **Transaction:** The transaction stage enables transactions such as paying for license renewals online, paying taxes or fees, or submitting bids for procurement contracts.
- **Transformation:** The highest stage, most closely aligned with the concept of governance, involves a reinvention of how government functions are conceived and organized.

UN / ASPA Study – Five Stages of e-Government Development

United Nations Division for Public Economics and Public Administration (2001) study "Benchmarking E-government: A Global Perspective, Assessing the Progress of the UN Member States" identifies the five stages for quantifying progress of e-Government. Study identifies e-Government stages as representative of the Government's level of development based primarily on the content and deliverable services available through official websites.

- **Emerging:** An official government online presence is established through a few independent official sites. Information is limited, basic and static.

- **Enhanced:** Government sites increase; information becomes more dynamic. Content and information is updated with greater regularity.
- **Interactive:** Users can download forms, e-mail officials, interact through the web and make appointments and requests.
- **Transactional:** Users can actually pay for services or conduct financial transactions online.
- **Seamless:** Full integration of e-services across administrative boundaries. Total integration of e-functions and services across administrative and departmental boundaries.

Layne & Lee Study – Four Stage e-Government Model

To help public administrators think about e-Government and their organizations Layne and Lee (2001) provided a four stage e-Government development and proposes a 'stages of growth' model for fully functional e-Government.

- **Cataloguing**: In stage one of cataloguing, initial efforts of state governments are focused on establishing an on-line presence for the government.
- **Transaction**: In the transaction stage, e-Government initiatives will focus on connecting the internal government system to on-line interfaces and allowing citizens to transact with government electronically.
- **Vertical integration**: Vertical integration refers to local, state and federal governments connected for different functions or services of government.

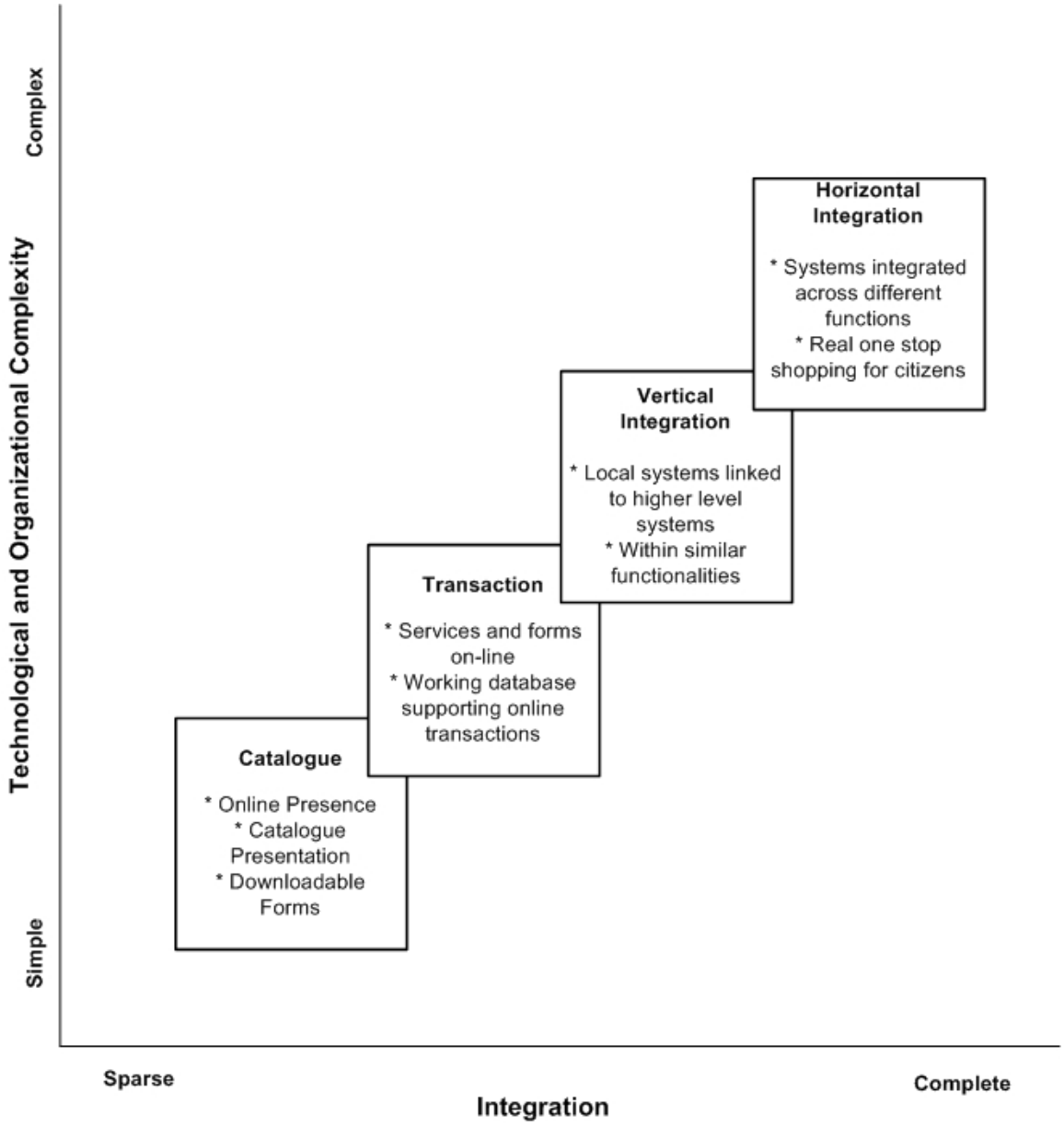

Figure 4. Four stage e-Government model (Layne & Lee, 2001)

- **Horizontal integration**: Horizontal integration is defined as integration across different functions and services. In defining the stages of e-Government development, the vertical integration across different levels within similar functionality is posited to precede the horizontal integration across different functions.

World Bank study – 3 Phases of e-Government

To assist policymakers in devising their own plans and initiatives, Center for Democracy and Technology (2002) divides the process of e-Government implementation into three phases. These phases are not dependent on each other, nor need one phase be completed before another can begin, but conceptually they offer three ways to think about the goals of e-Government.

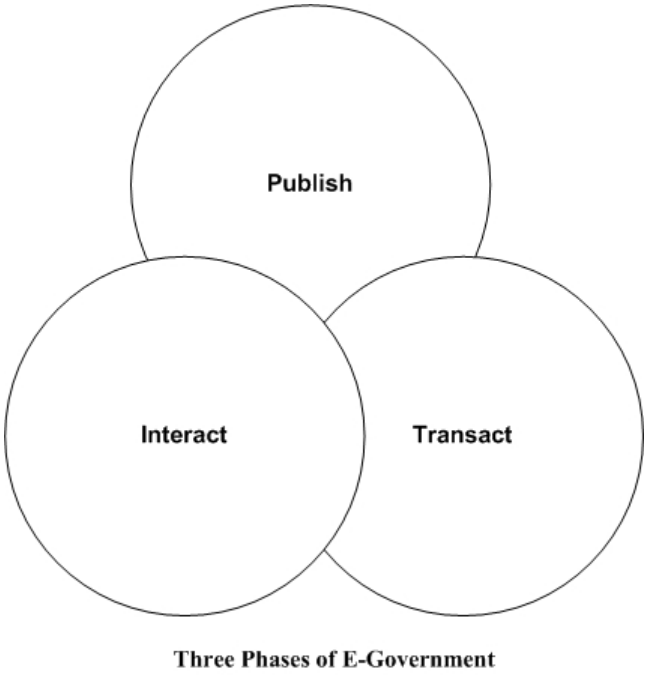

Figure 5. Three phases of e-Government (Center for Democracy and Technology, 2002)

- **Publish:** Publish sites seek to disseminate information about government and information compiled by government to as wide an audience as possible. In doing so, publish sites serve as the leading edge of e-Government.
- **Interact:** Interactive e-Government involves two-way communications, starting with basic functions like email contact information for government officials or

feedback forms that allow users to submit comments on legislative or policy proposals.

- **Transact:** Allowing citizens to obtain government services or transact business with the government online. A transact website offers a direct link to government services, available at any time. Transact sites can enhance productivity in both the public and private sector by making processes that require government assistance or approval simpler, faster, and cheaper.

IBM Study – 4 Phases of e-Government

For e-Government transformation to flexible, outcome-focused organizations that citizens are learning to expect, governments will need to develop on demand capabilities. On demand environment will require an open and scalable infrastructure, new technologies, and appropriate and targeted implementations of reengineered processes. (IBM Business Consulting Services, 2003, p. 12)

- **Automate:** Initial focus on citizens and Web presence is relatively straightforward.
- **Enhance:** Governments do not have to make many changes to existing applications or policies to reach Wave 2.
- **Integrate:** To progress toward Wave 3 is more difficult as it requires serious planning in transformation of business processes and integration.
- **On demand:** To progress to Wave 4, which is a transformation to an On demand model involves three paths: business model transformation, infrastructure transformation and cultural transformation.

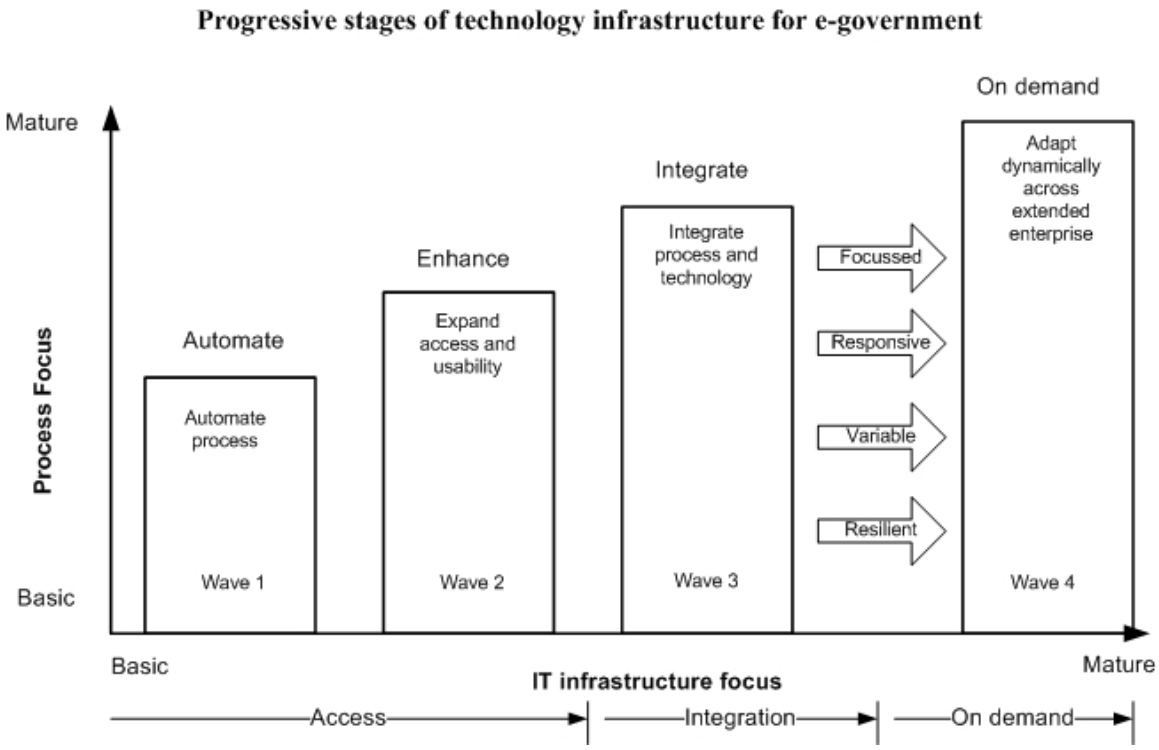

Figure 6. Progressive stages of technology infrastructure for e-Government (IBM Business Consulting Services, 2003, p. 12)

Legislations Related to e-Government

Study by Mullen (2005) and U.S. Office of Management and Budget (2006) web site titled "E-Gov & IT Related Legislation Overview" provides details of several US e-Government related legislations.

Paperwork Reduction Acts of 1980 and 1995

The purpose of the Paperwork Reduction Act (PRA), as reauthorized, is (1) to minimize the public's paperwork burdens resulting from the collection of information by or for the federal government; (2) to coordinate agencies' information resources management (IRM) policies; (3) to improve dissemination of public information; and (4) to ensure the integrity of the federal statistical system. PRA also requires agencies to

indicate, in strategic information management plans, how they are applying IRM to improve the effectiveness of government programs, including improvements in the delivery of services to the public (Mullen, 2005).

Computer Security Act of 1987

The purpose of the Computer Security Act is to improve the security, including privacy, of sensitive information in federal computer systems. To control loss and unauthorized modification or disclosure of sensitive information and to prevent computer-related fraud and misuse, the law relies on the National Institute of Standards and Technology (NIST) to develop standards and guidelines for computer systems to be promulgated by the Secretary of Commerce (Mullen, 2005).

Government Performance Results Act of 1993 (GPRA)

The Government Performance and Results Act (GPRA) seeks to shift the focus of government decision making and accountability away from a preoccupation with the activities that are undertaken to a focus on the results of those activities, in terms of real gains in employability, safety, responsiveness, or program quality. Under the Act, agencies are to develop multiyear strategic plans, annual performance plans, and annual performance reports (Mullen, 2005).

Clinger-Cohen Act of 1996

In 1996, recognizing the importance of information technology for effective government, the Congress and President enacted the Information Technology Management Reform Act and the Federal Acquisition Reform Act. These two Acts, together known as the Clinger-Cohen Act, require the heads of Federal agencies to link

IT investments to agency accomplishments. The Clinger-Cohen Act also requires that agency heads establish a process to select, manage and control their IT investments (Mullen, 2005).

Government Paperwork Elimination Act of 1998

The Government Paperwork Elimination Act of 1998 (GPEA) requires Federal agencies to allow the option of submitting information or transacting business with them electronically. GPEA is intended to help citizens gain one-stop access to existing Government information and services, provide better, more efficient service, and increase Government accountability to citizens. In addition, the law encourages Federal agencies to use a range of electronic alternatives (Mullen, 2005).

Government Information Security Reform Act of 2001. (GISRA)

The main purposes of the Government Information Security Reform Act (GISRA) are (1) to provide a comprehensive framework for establishing and ensuring the effectiveness of controls over information resources that support federal operations and assets (2) to provide effective government-wide management and oversight of related security risks, including coordination of information security efforts throughout the civilian, national security, and law enforcement communities.

e-Government Act of 2002

The e-Government Act of 2002 (E-GA) was passed to enhance the management and promotion of c-government services and processes. To increase citizen access to government information and services, the law established a federal CIO in an Office of e-Government within OMB which oversees information resource management, including

development and application in the federal government and established a broad framework of measures that require the use of Internet based IT (Office of Management and Budget, 2006).

Table 8. IT Performance-Based Laws and Purpose (Mullen, 2005) and (2006)

IT law	Purpose
Paperwork Reduction Acts of 1980 and 1995	• minimize the public's paperwork burdens • co-ordinate federal information resources management • improve dissemination of public information • ensure the integrity of the federal statistical system
Computer Security Act of 1987	• improve the security and privacy of sensitive information in federal computer systems
Government Performance and Results Act (GPRA) of 1993	• focus of government decision making and accountability develop multiyear strategic plans, annual performance plans, and annual performance reports
Clinger-Cohen Act of 1996	• improve federal programs through improved acquisition, use and disposal of IT resources
Government Paperwork Elimination Act (GPEA) of 1998	• require federal agencies to provide the public, when practicable, the option of submitting, maintaining, and disclosing required information electronically
Government Information Security Reform Act of 2001	• direct federal agencies to conduct annual IT security reviews • mandate inspector general (IGs) to perform annual independent evaluations of agency programs and systems and report results to OMB • require OMB to (1) report annually to Congress on government-wide progress and (2) issue guidance to agencies on reporting instructions and quantitative performance measures
e-Government Act of 2002	• promote the use of the Internet and other IT to provide government services electronically • strengthen agency information security • define how to manage the federal government's growing IT human capital needs • established an Office of Electronic Government, within OMB, to provide strong central leadership and full time commitment to promoting and implementing e-Government

Benefits of e-Government

e-Government provides many opportunities to improve the quality of services to the citizens. e-Government is helpful in meeting today's expectations of citizen and business for interaction with government. It will enable agencies to align their efforts as needed to improve service and reduce operating costs. When e-Government initiatives deploy effectively, conducting business with the government becomes easier and faster (Office of Management and Budget, 2002, p. 3).

e-Government will transform the process and structure of government to create a public administration less hierarchical, empowering civil servants to serve citizens better, and to be more responsive to their needs. e-Government has its potential for stronger institutional capacity building, for better service delivery to citizens and business, for reducing corruption by increasing transparency and social control (United Nations Division for Public Economics and Public Administration, 2001, p. 5).

Deloitte Research study (2003a, p. 3) "Citizen Advantage: Enhancing Economic Competitiveness Through e-Government" states that the strategic application of IT particularly e-Government has the potential to radically reduce the amount of time and money that businesses and citizens must spend to comply with rules and regulations. It can do so in five ways listed below.

- providing information in one easy-to access location
- simplifying and streamlining reporting requirements
- reducing the number of forms
- making transactions (paying fees, obtaining permits) easier

- helping businesses understand what regulations apply to them, and how to comply with them

Study by Intergovernmental Advisory Board (2003, p. 1) "High Payoff in Electronic Government: Measuring the Return on e-Government Investments" recommends that any successful e-Government program should address at least one of the following areas.

- Financial: Reduced costs of government operations / enhanced revenue collection
- Economic development
- Reduced redundancy: Consolidating and integrating government systems
- Fostering democratic principles
- Improved service to citizens and other constituencies.

Pew Internet & American Life Project (2002) study 'The Rise of the e-Citizen' identifies the following results on how citizens use government agencies' Web sites.

Table 9. What Government Site Users Do at Agency Web Sites (Pew Internet & American Life Project, 2002, p. 3)

Service	**Percentage Use**
Get tourism and recreational information	77%
Do research for work or school	70%
Download government forms	63%
Find out what services a government agency provides	63%
Seek information about a public policy or issue of interest to you	62%
Get advice or information about a health or safety issue	49%
Get information about potential business opportunities relevant to you or your place of employment	34%
Send comments about an issue to a government official	34%

Get information or apply for a government job	24%
Get information about elections, such as where to vote	22%
Get information that helped you decide how to vote in an election	21%
Get information about a lottery	21%
Get information about or apply for government benefits	20%
File your taxes	16%
Renew a driver's license or auto registration	12%
Renew a professional license	7%
Get a fishing, hunting or other recreational license	4%
Pay a fine	2%

Deloitte Research (2003b) named "Cutting Fat, Adding Muscle: The Power of Information Technology in Addressing Budget Shortfalls" classifies the effects of e-Government on public sector efficiency and the resulting cost savings into six categories:

Table 10. e-Government on Public Sector Efficiency and the Resulting Cost Savings (Deloitte Research, 2003b)

1. Lower service processing costs through automation	E-government allows the public sector to automate many routine interactions with citizens and businesses and back-office processes, eliminating paperwork and reducing processing costs, such as sorting, stuffing, mailing, and printing.
2. Lower service delivery costs through self-service transactions	Letting customers serve themselves through self-service electronic counters allows governments to increase service quality, reduced waiting times, round the clock access, more specialized services, and better service information while significantly reducing customer service costs. In particular, it allows reducing the physical service delivery infrastructure (i.e. number of local offices) and the number of employees needed for over-the counter customer service.
3. Lower public procurement costs through e-procurement	E-procurement, which encompasses electronic catalogues, web-based bid notifications, purchase cards for smaller purchases, reverse auctions, and end-to-end paper-less transaction capabilities, holds tremendous promise for reducing procurement cycle times, speeding up transactions, increasing competition, slashing costs for postage, printing, and copying, freeing up staff time, cutting administrative costs, and driving down costs of procured goods and services by

	enabling more leveraged, consolidated purchasing.
4. Improved supply chain management	The best short-term opportunities to reduce costs through better supply chain management (sourcing, purchase orders, and logistics) lie with organizations that procure large quantities of supplies and equipment (e.g. in the areas of defense, transportation, health and human services, etc.), which can move away from the practice of stockpiling months' and even years' worth of supplies.
5. Reduced training and travel expenses through e-learning and e-collaboration	E-learning, together with electronic collaboration technologies such as teleconferencing, e-rooms and web seminars can help governments slash travel and training costs. Much of the savings would come from reduced travel expenses, which typically amount to up to 50% of training budgets, and lower off-site, instructor, and training administration costs.
6. Reduced errors, fraud and abuse	Government each year because of over-payments, errors, false claims, and outright fraud wastes significant amount of money. Technology is making it easier for governments to detect and reduce this waste (e.g. neural networks, data mining, data brokers, eligibility systems, audit recovery, biometrics).

Tangible Benefits of e-Government

A study conducted by Capgemini (2004) for the Dutch Ministry of the Interior and Kingdom Relations and European Public Administration Network (EPAN) titled "Does e-Government Pay Off?" specifies the following as the tangible benefits of e-Government.

Table 11. Tangible Benefits of e-Government (Capgemini, 2004)

1. Improved quality of information and information supply	The direct input of data in electronic format by public services users reduces the number of errors and makes it possible to build quality management information systems. Furthermore, the shared use of information and databases made possible by electronic networks can also improve the quality of data and data supply.
2. Reduction of process time	The digitization of public services can significantly reduce the time it takes to process and deliver a service (process time), therefore saving precious time for both public administrations and their customers.
3. Reduction of administrative	The availability, sharing and re-use of electronic data, the digitization of key processes and the elimination of unnecessary steps,

burdens	accompanied by adequate organizational change, can provide a major contribution to the reduction of "red tape" (i.e. unnecessary administrative burden).
4. Cost reduction	E-government enables public sector bodies to increase their service processing and delivery capabilities, while requiring less time and fewer personnel. Leaner process design, the automation of parts of the service delivery process and the use of electronic communication with customers can lead to significant cost savings that, in the medium term, can benefits the taxpayers.
5. Improved service level	A major benefit of e-Government is the improved service level in terms of increased flexibility (24/7 availability, multi-channel delivery, etc.), transparency (availability of more detailed and complete information about the service) and of increased time available for custom-made services (through an easier and faster processing of standard cases or tasks, and the possibility to customize electronic service delivery).
6. Increased efficiency	The improved information supply and service levels by e-Government, can contribute to increase the efficiency (i.e. the capability to convert resources and inputs into effects and impacts) of public service delivery. Tasks and costs can be more efficiently distributed both within and between public sector bodies and processes can be more streamline to make better use of available re-sources and increase delivery capabilities.
7. Increased customer satisfaction	By raising service levels, reducing processing and delivery time, and making public services more responsive and customer-focused, e-Government makes it possible to increase customer satisfaction.

Non-Tangible Benefits of e-Government

Beyond the tangible benefits of e-Government, broader societal, political or economic benefits, following non-tangible benefits are identified by the IDABC e-Government Observatory (2005) study "The Impact of e-Government on Competitiveness, Growth and Jobs" . They are as follows.

Table 12. Non-Tangible Benefits of e-Government (IDABC eGovernment Observatory, 2005)

1. Openness and transparency	e-Government gives citizens greater access to information held by public authorities. This enables them to understand where their taxes are spent and how decision-making are done, thus empowering citizens. This is an improvement towards more transparent, accountable, and open public institutions.
2. Increased participation in the information society	The use of ICT to promote proactive, multi-channel communication with public services users will lead to greater participation in the information society. By providing adequate e-inclusion policies, e-Government has significant potential for increasing social inclusion.
3. Increased democratic participation	Through online forums, consultations and electronic voting, direct communication is possible between citizens and policy-makers. Citizens can express their views on policy debates, directly question the decisions made, and so contribute with an informed opinion to the democratic process.
4. Enhanced policy effectiveness	By facilitating the exchange of information between public administrations, and between administrations and the public, e-Government provides the foundation for enhancing the effectiveness (i.e. the ability to produce results matching the objectives) of public policies in major policy areas such as health, education, national security and public safety.
5. Increased economic competitiveness	By streamlining bureaucratic procedures and increasing public sector efficiency, e-Government plays a significant role in raising productivity levels in the economy as a whole. Furthermore, by reducing 'red tape' and providing better access to information and better quality, user-centered public services, e-Government can encourage entrepreneurship and increase the competitiveness of enterprises.

The study by OECD on e-Government Benefits titled "Proposed Outline For Assessing e-Government Benefits" (2006) categorizes e-Government beneficiaries into two major groups of beneficiaries: government and non-government (non-government being citizens and businesses). It further classifies the type of benefits into three groups

such as Direct Financial Costs and Benefits, Direct Non-Financial Costs and Benefits and Indirect Costs and Benefits.

Table 13. e-Government Benefits: A Proposed Outline (OECD, 2006)

Beneficiaries / Type of Benefit	Government	Non-Government (Citizens & Business)
Direct Financial Costs and Benefits	1) Reducing Costs: • freeing resources for public and private innovation; • increasing value of products and services	2) Reducing Burden: • administrative simplification; • providing higher valued and faster services; • saving time and money and improving equity
Direct Non-Financial Costs and Benefits	3) Capturing Total Benefits of Investment: • achieving synergies across service delivery channels; • enabling the sharing and reuse of data for more proactive service delivery; • promoting access as part of channel management strategy	4) Increasing User Satisfaction: • 24/7 service; • improving personalization and service quality; • improving access and equity; addressing security and privacy concerns; • transparency and choice
Indirect Costs and Benefits: "Good Governance" as a Public Good	5)Supporting Legitimacy: • supporting security and trust at an aggregate level; • modernization and transformation of the public sector; ensuring equity; • increasing responsiveness, accountability and participation	6) Supporting Growth: • improving the business environment; • creating an information society; • establishing an infrastructure for secure and reliable transactions

The study by OECD (2005) titled "The Business Case for e-Government", lays out the reasons why OECD countries have increasingly turned to business cases to justify ICT investments and provides an overview of the types of methodologies typically used.

Table 14. Types of e-Government Evaluation Activities Employed in OECD Countries (OECD, 2005)

Country	Financial assessment methods	Non-financial assessment methods
Australia	net present value, return on investment, value assessment methods	key performance indicators
Austria		Benchmarking
Canada	value assessment methods	capacity check
Czech Republic		Benchmarking
Denmark	net present value	
Finland	cost-benefit analysis	key performance indicators
Germany		key performance indicators
Italy	cost-benefit analysis	
The Netherlands		key performance indicators
New Zealand	net present value, financial analysis	key performance indicators
Poland		key performance indicators
United Kingdom	break-even analysis, net present value, cost-benefit analysis	benchmarking
United States	return on investment, net present value, cost-benefit analysis, initial rate of return, value assessment methods	key performance indicators

Table 15. Types of e-Government Evaluation Methodologies (OECD, 2005)

Method	Description	Use
Transaction costs	Uses segmentation methods to calculate use and benefits to different user groups	Quick and easy way to estimate potential cost savings from the introduction of e-Government
Net present value	A straightforward method that examines monetary values and measures tangible benefits	Relatively straightforward; use when cash flows are private and benefits tangible

Cost-benefit analysis	A flexible method that measures tangible and intangible benefits and assesses these against net total cost	Good consideration of all benefits, but can be expensive and time consuming
Cost effectiveness analysis	Focuses on achieving specific goals in relation to marginal costs	Good for considering incremental benefits against specific goals
Portfolio analysis	A complex method that quantifies aggregate risks relative to expected returns for a portfolio of initiatives	Good for consideration of risk, must use a consistent approach across a portfolio
Value assessment	A complex method that captures and measures benefits unaccounted for in traditional ROI calculations	Used by several governments to consider performance against all policy goals

e-Government Barriers

There are numerous obstacles that can hinder progress towards realizing the promise of e-Government. A recent study by eGovernment Unit of European Commission titled "Breaking Barriers to eGovernment" identifies seven categories represent the visible peaks to which are tied a multitude of more specific barriers that are relevant at different governance, institutional and jurisdictional levels.

Table 16. Seven key e-Government Barriers (DG Information Society and Media, 2006)

Leadership failures	Slow and patchy progress to e-Government can result from a lack of adequate leadership during any stage in the initiation, implementation, promotion and ongoing support of developments.
Financial inhibitors	Inappropriate cost/benefit analyses can fail to release the flow of investment at the levels necessary to support future e-Government innovation.
Digital divides	Inequalities in skills, access to appropriate systems, knowledge and motivational support can limit and fragment take-up of e-Government.
Poor coordination	Lack of coordination and harmonization can put a brake on establishing appropriate e-Government networks and services that cross governance, administrative and geographic boundaries.

Workplace and organizational inflexibility	The wide realization of e-Government benefits can be constrained or blocked by inflexibilities in responding to the need to make necessary changes in public administration practices.
Lack of trust	Heightened fears about inadequate security and privacy safeguards in electronic networks can undermine confidence in applications of e-Government that might pose risks, such as through unwarranted access to sensitive personal information or vulnerability to online fraud or identity theft.
Poor technical design	Interoperability blockages caused by incompatibilities between ICT systems or difficult-to-use interfaces to e-Government services exemplify the kinds of practical flaws that can become serious operational obstacles to take-up of what otherwise appear to be valuable e-Government systems.

e-Government Performance Measurement Studies

Even though a number of methods have been developed to assess the wider benefits of e-Government, most of them focus on the internal benefits (i.e. the benefits of e-Government within a given jurisdiction) (IDABC eGovernment Observatory, 2005, p. 14).

The efficiency of the production and delivery to public services are very difficult to evaluate, for a number of reasons related to the measurement of outputs and outcomes. Performance measurement is indeed more difficult in the public sector than in the of private sector, because public sector services are often provided to the customers free of cost or at a subsidized price and no market prices can thus be used to valuate them. As a result of these difficulties, the measurement of efficiency of the public services' and productivity have historically tended to ignore outcomes and outputs (IDABC eGovernment Observatory, 2005, p. 21).

Performance measures should be assessed directly from the organization's mission statement, strategic issues, goals, and objectives (Stowers, 2004, p. 36) and no

performance measurement system should be developed in isolation from the goals and direction of the organization.

e-Government evaluation is made more difficult by the fact that public sector bodies, unlike private companies, do not operate on competitive markets where prices are a major factor. For most public services, there is no competition and the fees charged are not necessarily related to costs. In addition, government bodies are not subject to consumer or financial market disciplines, which require a continuous monitoring of costs, efficiencies, and performance. Therefore, public bodies have no pressure to assess the cost of each single service. As a result, most public administrations do not have accounting and controlling systems providing data about the cost of each individual service. They do not have a system of accounting for the cost of key processes or the cost of their ICT systems and operations (IDABC eGovernment Observatory, 2005).

It is often technically very difficult for public sector bodies to measure the overall economic and financial implications of e-Government. It is because their service deliveries involve several administrative organizations. Furthermore, it is complex, politically sensitive, and often needs a long term view to really assess beneficial results. When public bodies do closely examine the costs and benefits of specific activities, they may be wary of publishing the results, unless specifically required to do so by politically set targets, performance measurement initiatives, users' charters, etc (IDABC eGovernment Observatory, 2005).

Just as it is difficult to measure the impact of the public sector efficiency, it is not also easy to measure or evaluate the reduction of administrative burdens and cost for citizens and businesses. . The lack of adequate metrics and measuring tools make it

difficult to make meaningful calculations of direct costs savings for public services to its users. However, most government ROI and business case methodologies still focus on direct returns for government bodies and do not measure the benefits of e-Government investments for citizens and businesses. Internal efficiencies are important. But governments also need to measure the value e-Government generates for those they are serving. As far as feasible, the complete spectrum of economic, social, and cultural costs and benefits of each individual element of an IT investment or e-Government program should be taken into account (IDABC eGovernment Observatory, 2005, p. 33).

Performance Measurement Studies of e-Government in Academic Research

In the absence of a market competition among governments, it is no surprise that the public sector has lagged behind the private sector in terms of innovate its practices and tailoring them to the new possibilities and forms of the Internet. The public sector has in large part copied that which has been done by the private sector and adopted e-commerce as a model for transforming their functions (Kaylor, Deshazo, & Eck, 2001, p. 297).

Study by Kaylor et al. (2001, p. 297) noticed that the functional dimensions of the websites such as payments, registration, permits, customer service, communication, licenses, images, audio / video, documents, applications, e-procurement etc. to access the e-Government implementation among the US cities. Authors tallied the scores collected from each municipality for specific functions into an overall e-score. Using the set of criteria, study assessed the degree to which functions and services were web-enabled using a four-point scale.

Gupta and Jana (2003, p. 369) uses a practice called multimethodology, which combines methods or techniques together in a particular intervention and proposes proper evaluation of tangible and intangible benefits of e-Government. Gupta and Jana (2003, p. 369) make use of combination of hard measures, soft measures & hierarchy of measures for evaluating e-Government projects and classifies the e-Government evaluation measures as:

- Hard measures: Cost benefit analysis, Benchmarks in e-Government
- Soft measures: Scoring method, Stages of e-Government, Sociological angle
- Hierarchy of measures: Return on investment, Total costs and revenues, Improvement in quality of planning and control, Quality of decisions, Value of information, System characteristics.

Different methods of performance measurement generate different kinds of results, with different levels of reliability. Government organizations should make a performance evaluation and see whether they are capable of doing the task and delivering services as expected (Gupta & Jana, 2003, p. 366).

Melitski (2003) examined the relationship between IT capacity and e-Government performance. His study used the following five e-Government performance measures.

- how far am organization progress across a similar continuum of e-Government (CGS performance measure)
- total number of services
- total number of transactional services
- number of distinct directories
- average number of URLs directories

Many measuring instruments take a simplistic view and focus on measuring what is easy to measure. Many of the instruments focus on measuring the visible front of e-Government, and ignore the performance of the cross-agency business processes. None of the instruments focuses on measuring multi-service organizations. The instruments focus on one (type of) agency and do not provide an overall picture (Peters et al., 2004, p. 487).

Steyaert (2004, p. 6) in his study has adopted the e-commerce marketing framework model to evaluate the performance of electronic government and proposes five e-commerce performance indicators listed below.

- Awareness efficiency: the total number of internet visitors relative to total agency visitors or consumers
- Popularity efficiency: agency rank (in monthly visitors) relative to the rank of other federal and state agencies
- Contact efficiency: a score based on overall site content (e.g. convenience, security, and privacy with on-line data, publications, e-mail, licenses etc.)
- Conversion efficiency: scores based on customer satisfaction with federal services, state electronic transactions, and visitor time
- Retention efficiency: customer loyalty based on repeat transactions and repeat visits

Study by Wang, Bretschneider and Gant (2005) argues that despite the importance of the evaluation of Web-based e-Government services, especially the performance of government Web sites in facilitating public-government interaction, little research has been generated. They suggested the use of a multidimensional web

evaluation strategy that are common in the evaluation of commercial web sites. This includes methods such as usability testing, user feedback, usage data, and web and internet performance, etc.

Performance Measurement Studies of e-Government in Public Sector

A number of public sector agencies have undertaken studies to measure the benefits of e-Government. Some of the prominent groups are as follows:

In May 2003 the US General Services Administration (GSA) issued a report "High Payoff in Electronic Government". They classified e-Government program benefits as financial (reduced costs of government operations / enhanced revenue collection), economic development, reduced redundancy (consolidating and integrating government systems), fostering democratic principles, and improved service to citizens & other constituencies (Intergovernmental Advisory Board, 2003).

The Clinger-Cohen Act and the e-Government initiatives under the President's Management Agenda called for the use of performance measures to justify manage and evaluate the success of e-Government initiatives. Despite these requirements, reviews of IT planning and measurement documentation by individual agencies demonstrated a need for a clear, tactical guidance for developing and measuring successful e-Government initiatives (The Performance Institute, 2002, p. 9).

Measuring E-Gov benefits is a growing priority in governments, although the state of the art appears to be in a primitive stage. Investments in e-Government, like other government investments, have not been driven solely, or generally, by the prospects for financial return. These programs have been created to deliver better services to citizen / business / interest group constituencies. Each case requires a tailored measurement

approach that considers the quality, speed, comprehensive services to citizens, economic efficiencies, alignment with government's strategic/political priorities, risks of changing technologies, potential cost overruns and changing needs (Intergovernmental Advisory Board, 2003, p. 4).

European Commission DG Information Society (2004a) study titled "Reorganization of Government Back-offices for Better Electronic Public Service" identifies three fundamental conditions needed to be fulfilled for e-Government to deliver tangible and substantial efficiency gains and cost savings.

- Service delivery efficiencies can be realized if its take-up is sufficient: Unlike private companies, government cannot refuse to deal with customers that have no access or limited access to electronic service delivery channels. Thus, electronic services often need to be added to existing delivery channels rather than replace them, at least during a certain period. Consequently, efficiency gains and savings on service delivery costs cannot be realized until a significant percentage of users have shifted from the traditional delivery channel to the electronic channel.
- Major efficiency gains arise from back-office re-engineering: e-Government cost savings, quality improvements and efficiency gains come from re-engineering the internal structures and processes of government rather than from simply moving services online.
- Back office changes must go along electronic service delivery: It is important that efficiency gains are only generated when the organization and human resources change along side when the technology is implemented.

As with any government program, the value of e-Government is in the benefits it delivers to the public and the new avenues it opens to create value. But e- Government can be costly, and its value and usefulness to the public that supports it must be shown. The best way to measure the performance of e-Government programs cab be assessed by the objectives of the program itself and the public agency that sponsors it (Intergovernmental Advisory Board, 2003, p. 2).

In many companies, major gains have come from changing the technology to transform old business practices. As per a report on "e-Government Strategy" by the Office of Management and Budget (2002, p. 5) there are at least four major reasons that influenced the federal government which has been unable to increase productivity of e-Government. They are:

- Program Performance Value: Agencies evaluate their IT systems according to how it can serve the agency's processes & needs and not how well they can respond to citizens' needs.

- Technology Leverage: Government agencies use IT to automate existing processes, rather than to create more efficient and effective solutions.

- Islands of Automation: Agencies generally buy systems that address internal needs, and rarely are the systems able to inter-operate or communicate with those in other agencies.

- Resistance to Change: Budgeting processes have not provided a mechanism for investing in cross-agency IT. Agency cultures and fear of reorganization create resistance to integrating work and sharing use of systems across several agencies.

National, state, local, and tribal agencies use a combination of measures, including financial measures, customer-satisfaction, and risk assessment. Investment decisions may be based largely on political or legislative priorities (Intergovernmental Advisory Board, 2003, p. 9). Study titled "High Payoff in Electronic Government: Measuring the Return on e-Government Investments" by Intergovernmental Advisory Board (2003, p. 9) classified number of steps used to evaluate e-Government programs which include

- Financial measures: return-on-investment, cost-benefit analysis, including net-present-value and internal-rate-of-return
- Public approval and acceptance: customer satisfaction measures and E-Gov take-up, or adoption, rates
- Benchmarking
- Balanced scorecard measures
- Business cases
- Portfolio analysis and risk management.

Individual citizen can interact with the e-Government by an alternative channel for accessing information and services.. It also gives the individual citizen another choice: whether to become an active participant in the governing process or remain as a passive observer (United Nations Division for Public Economics and Public Administration, 2001, p. 6).

Based on a study by The Performance Institute "Creating a Performance-based Electronic Government" (2002, p. 10) , proposes following critical success factors which are relevant to e-Government initiatives:

- Stakeholder Input: Does the initiative respond to and measure clearly identified expectations of stakeholders and customers?
- Budget Justification/Capital Planning: Does the initiative clearly align with the agency's mission, IT capital plan, and existing program performance measures?
- Program Management: Is the initiative supported by adequate internal systems of management (including project metrics) to ensure project success?
- Partnership/Acquisition Strategy: Are partner and vendor contributions clearly identified and managed for results?
- Alternatives/Risk Analysis: Have all alternative scenarios and risks been assessed?
- Enterprise Architecture: Is the initiative consistent and aligned with the overall enterprise architecture defined for the agency?
- IT Privacy/Security: Does the project reflect and track compliance with privacy and security requirements?

In Australia, the National Office for the Information Economy (NOIE) published a paper on "e-Government Benefits Study". It suggested classification of e-Government value into three categories namely Economic (agency value, consumer financial value, social economic value) , Social (social worth) and Whole of Government (governance worth) (The National Office for the Information Economy, 2003).

Table 17. Financial, Economic and Social Benefits Flowing from e-Government (The National Office for the Information Economy, 2003, p. 13)

Govt. Focus	Benefit category	Government online measurement	Quantification	Interim measure of economic impact	Indicators of economic input	Adjusted economic impact
Economic	Agency Value	Agency Costs Agency Efficiency Agency Revenue	Cost Reductions + Revenues increased – Costs of development	Benefit to cost ratio (Benefits/ costs)	Savings less costs	Net Economic Impact
	Consumer financial value	User Costs User Efficiency User Revenue	Consumer Cost Saving + Consumer revenues increased – consumer costs deployment	Net user benefit to cost ratio (User benefits /user costs)	((Wealth generated – consumer costs incurred) x (1-Avg. tax rate)) - agency costs incurred	Net Economic Impact
	Social economic value	Increased user economic participation Increased access to govt. programs Decreased govt. benefit payments	Consumer Income – consumer costs deployment	Net government benefit (govt. inflows – govt. outflows)	((Wealth generated– user costs incurred) x (1-avg. tax rate)) – net govt. benefit	Net economic impact
Social	Social worth	Increased educational, health, employment outcomes		Reach x impact	Social capital Created	Net economic impact
Whole-of-govt.	Governance worth	Increased transparency, accountability and participation of govt.		Reach x impact		

In their paper "Performance Measures for Federal Agency Web Sites" by McClure et al (2000, pp. E-10) points out that an ongoing program of evaluation

contributes to the process of constant improvement, looking for ways to improve the usefulness, impact, and benefits that can result from web-based resources and services. The issue is to identify the degree to which web-based resources and services are cost effective, deliver high-quality services, meet the needs of users, comply with existing policy, reduce agency costs, and help to accomplish agency mission and objectives.

Table 18. Performance Measures for Federal Agency Websites (McClure et al., 2000, pp. E-9)

Performance Goal	Basic Measures	Other Agency Specific Measures
Extensiveness: Amount or extent to which services are used	-Information on content unit retrievals; e.g., no. of document downloads -No. of user sessions per time period (not no. of hits)	-No of User contact sessions -Activity levels by time periods -Ratio of unique to repeat (2 or more) user sessions per time period.
Efficiency: Use of resources in providing services	-Cost of providing website session per user -Percent of operational time when website is not available	-No. of FTE hours or days devoted to website creation/ maintenance by size of site in pages -Cost per user help session -Relation to diminishing costs of other publications media (e.g., printing) as indicator that website may be replacing other media.
Effectiveness: How well the website meets the general governmental objectives and specific agency objectives	-Completeness of coverage of agency publications, press releases, etc. -Degree to which website is increasing the timeliness of access to agency pubs	-Permanent public access to agency publications -Degree to which GILS is integrated into website design/operations -Degree to which website shows agency reaching new constituent audiences
Service Quality: How well the website functions	-User success rate in finding specific information in a given time period -Average time between user contact request and agency response -Number of customer complaints / suggestions and whether agency action results.	-Whether agency has Help Desk dedicated to its website -24/7 availability measures -Minimal 404 errors -Courtesy, helpfulness of user support staff -Increase in no. of repeat users per time period

Usefulness: How well the website meets the needs of users	-Customer comments plus surveys and focus groups -Degree to which website information increases user productivity -Degree to which website information is incorporated into other tasks inside and outside the agency	-Cognitive and Usability Evaluation -Measured user satisfaction with: Clarity of homepage; organization of site Timeliness of website information Links to other useful information -No. of referrals from other websites and sources of referrals

Performance Measurement Studies of e-Government in Private Sector

There are number of private sector studies carried out recently to measure the benefits of e-Government. Some of the prominent ones are as follows

Application and service received from e-Government solutions decides in its value proposition. The main questions are: Does the promise of e-Government meet the needs and improve the lives of citizens? Can e-Government solutions enable businesses to operate more efficiently, faster and maintain better relationships with government? What is the critical role e-Government plays in solving problems for citizens and businesses? (Momentum Research Group, 2000, p. 7).

Improperly planned web-based services can only increase government's costs without adequately improving the citizen satisfaction. It is also important that e-Government services are constantly evaluated for costs and benefits. e-Government is a complex undertaking and when it is used with careful planning can help government to improve its ability to serve the public (Cohen & Eimicke, 2001, p. 32).

Cohen and Eimicke (2001) proposes following steps to successfully implement web-based services using e-Government to create a web strategy.

- Identify, describe, and analyze the operational steps of the service that is being considered for web-based delivery.

- Benchmark against similar services in other jurisdictions or organizations.
- Develop a pilot project to test web use in one district or in one element of the service.
- Analyze the results of the pilot project.
- Develop options for instituting wide-scale web-based delivery of the service.
- Conduct a costs and benefits analysis of piloted alternatives.
- Select an option.
- Develop a data collection system for operational performance of the service, its costs, and benefits.
- Analyze performance data, costs, and benefits.
- Perform periodic reviews of service delivery, and then modify the web format and operations.

Steyaert (2004) study used marketing model and it consists of five marketing indicators namely consumer awareness, popularity, contact efficiency, conversion, and retention. They used multiple quantitative and qualitative data to help to understand consumer behavior at government sites and used case studies from several federal government and state government web sites to illustrate the results of the study.

Efforts by Stowers (2004) on measuring performance of e-Government have provided many case studies and gave their best practice recommendation for performance measurement. The study used state's strategic plans, annual reports, and performance reports to identify the performance measures and developed best practices case studies. For the amount of time and money spent today on e-Government, the public sector needs to ensure accountability by spending more time in measuring the effects of these efforts.

As per Stowers (2004) study "Measuring the Performance of e-Government" concludes that e-Government performance measures can be categorized into one of two groups as shown.

- Web / Technology based measures: number of hits or user contact sessions, number of downloads of documents, number of page errors, and percentage of website down time etc.
- Services specific measures: adoption rates, customer satisfaction measures, timeliness (amount of time required to respond to an e-mail request), cost per transaction, access, and effectiveness etc.

Table 19. Potential e-Government Performance Measures (Stowers, 2004, p. 38)

	Input Measures	**Output Measures**	**Outcome Measures**
Web/ Technology Measures	• Application development and hardware set-up – Staff costs – Other development costs –Other vendor costs –Staff time for application development – Other development time –Vendor time for development purposes	• Number of hits or user contact sessions • Number of downloads of documents • Time users spend on a site • Number of times transactions completed, or the times online forms have been accessed and completed • Dollar amounts processed through each site	• Accessibility of services – Number of site pages meeting accessibility criteria • Accuracy of the assistance or information as measured by percent accuracy rates in random fact checking • Adequacy of information as measured by staff and citizen surveys • Ease of use as measured by pop-up or other surveys • Citizen satisfaction with site itself **Service Quality** •Percent of time when website is down and not available • Minimal webpage errors **Efficiency** •Cost per transaction •Total cost per user session **End Outcomes** • Cost savings from e-Government • Staff time savings from e-Government
Service-Oriented Measures	• Maintenance and application improvement – Staff costs – Other maintenance	• Time required for e-mail response to inquiry • Number of e-mail messages sent to agency and/or officials	• Level of citizen satisfaction with e-Government services measured by surveys • Usefulness of information measured by surveys

	costs –Other vendor costs – Staff time – Other improvement time –Vendor time	• Number of e- mail messages returned to them • Number of e-mail requests successfully resolved • Number of applications developed and implemented • Number of e-permits processed • Number of times various maps and mapping applications have been accessed • Number of e-commerce applications accessed • Number of license and other applications processed • Number of times multimedia presentations are played • Feedback on multimedia presentations • Number of times databases are accessed • Information in databases that is accessed most frequently	**Timeliness** • Response times to requests for information •Time required for e-mail response to inquiry **Service Quality** • Adoption rates within specified user groups • Number of referrals from other web-sites and government portals •For states and local governments, the number of agencies participating by providing information or services **Efficiency** • Cost of providing each service per user • Cost per service transaction **End Outcomes** • Cost savings from e-Government • Staff time savings from e-Government •Trust in government

Gartner research has introduced a new concept of 'Public Value of IT' to measure IT related investments in the public sector and how it can contribute in course of time to improve constituent service level, operational efficiency, and political return. It also suggests that governments must measure IT investments by their impact on society and the economy, and it should measure by the business improvements they bring. Value for Money Is Not Enough in Public Sector IT Projects (Gartner Research, 2003).

Accenture Consultancy introduced the 'Public Sector Value Model', which adapts the principles of commercial shareholder value analysis to a government context. This enables governments at all levels to assess how effectively their resources generate meaningful value for the average citizen. This model considers not only outcomes but also cost-effectiveness, the two major dimensions of value. It does this by identifying a

set of citizen focused outcomes against which cost-effective delivery is measured (Accenture, 2004b).

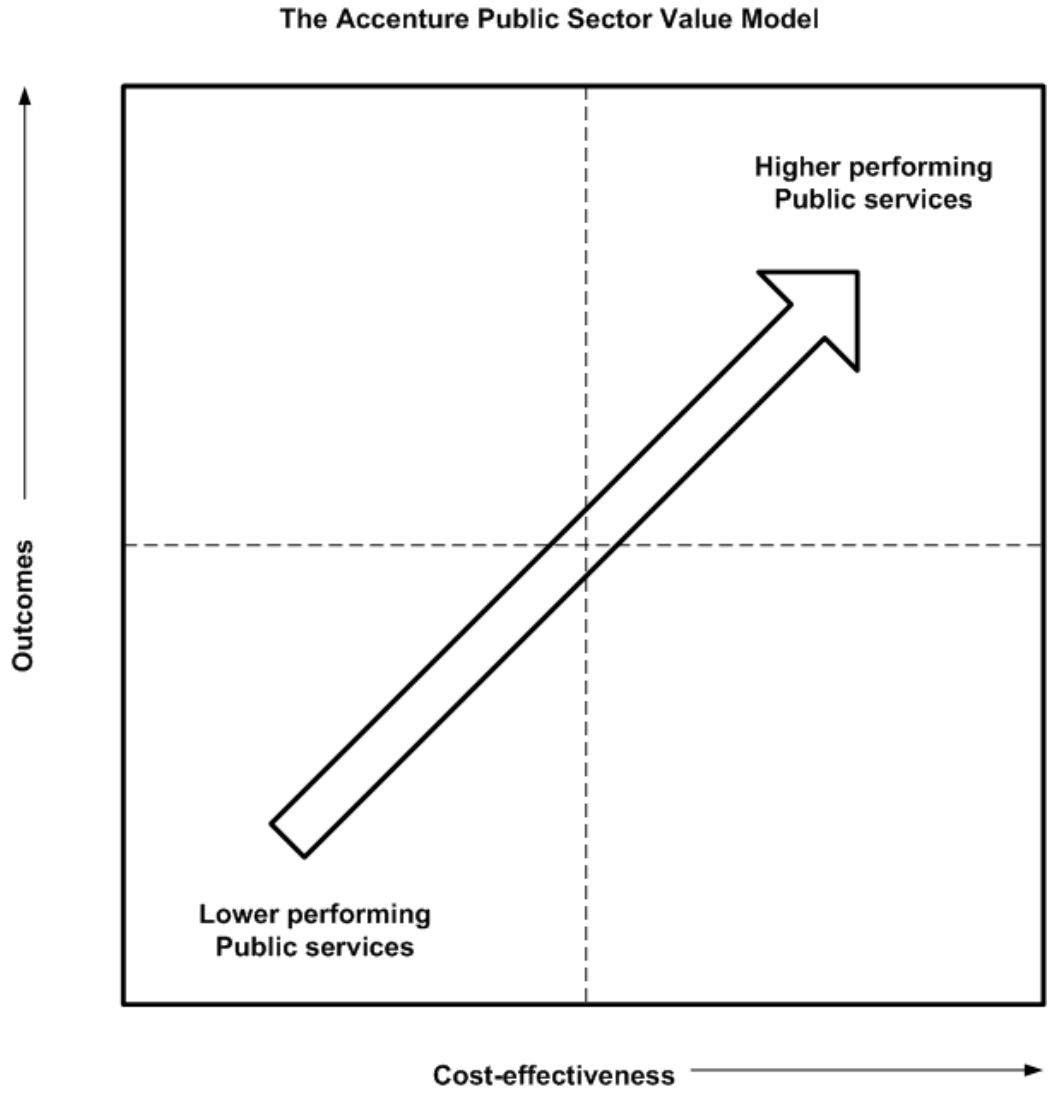

Figure 7. Accenture public sector value model (Accenture, 2004b)

Consultancy group Deloitte proposed the concept of 'Citizen Advantage' to measure the financial benefits of e-Government projects not only for government but also for businesses and citizens. The concept suggests a direct correlation between e-Government and economic competitiveness. By e-enabling and streamlining activities such as register, credentialing / licensing, permitting, reporting and paying, governments can indeed

significantly ease regulatory compliance burdens for businesses and entrepreneurs, which in turn help fuel economic competitiveness (Deloitte Research, 2003a). Depending on the nature of the interaction and the type of web-based solution employed, e-Government could potentially impact all three cost categories such as find, understand, and comply. The five common types of transactions citizens and businesses have with government can be classified such as registering, licensing, permitting, reporting, and paying (Deloitte Research, 2003a, p. 11).

The costs that go into doing business with government can be broken down into roughly three main categories: (Deloitte Research, 2003a, p. 9)

- Find: The cost of finding out what rules and regulations you need to comply with range from the opportunity costs of having to deploy internal resources to complete these activities, to the hard dollar costs of hiring a lawyer, accountant, or consultant.
- Understand: This stage involves figuring out what the rule means and how to comply with it. The complexity and vast number of government regulations can make this an extremely costly and time intensive activity.
- Comply: Actual compliance, the third stage, is typically the biggest cost driver for businesses and citizens; costs can include everything from gas, postage, time, and consultant costs, to the costs associated with buying and installing new equipment.

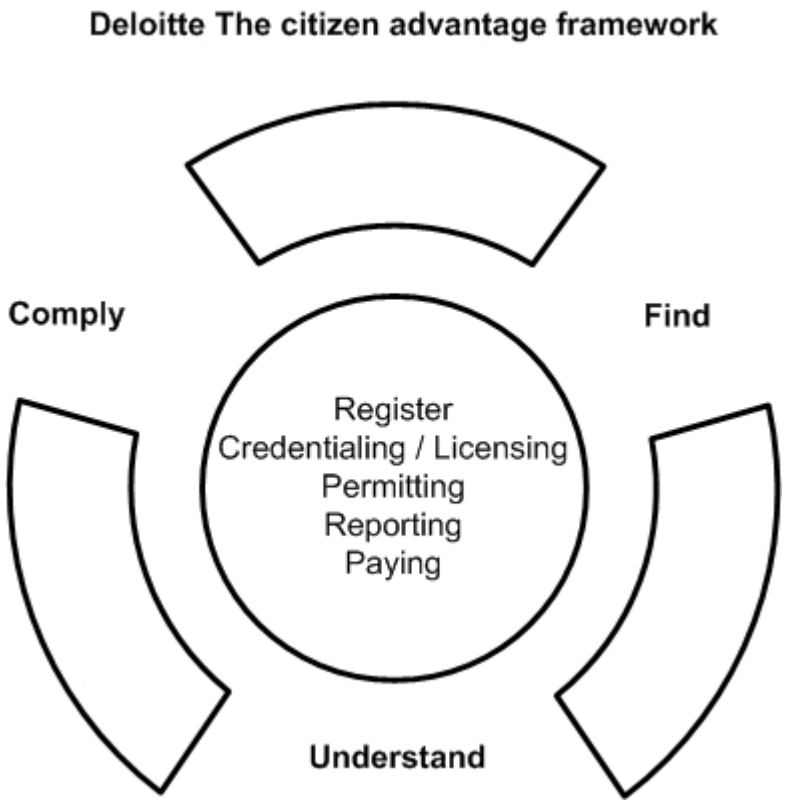

Figure 8. The citizen advantage framework (Deloitte Research, 2003a)

Review of e-Government Measurement Studies

There is a life cycle for research needs which follows the pattern of growth of e-Government. At the initial stage there is need for information on the readiness factors such as awareness, infrastructure, digital divide etc. At more mature stage one should look for the availability factors such as supply, maturity stage etc. As growth progress one should look at the uptake factors such as demand, usage and use divide. On the final phase include impact factors such as efficiency, effectiveness and equity (Heeks, 2006b).

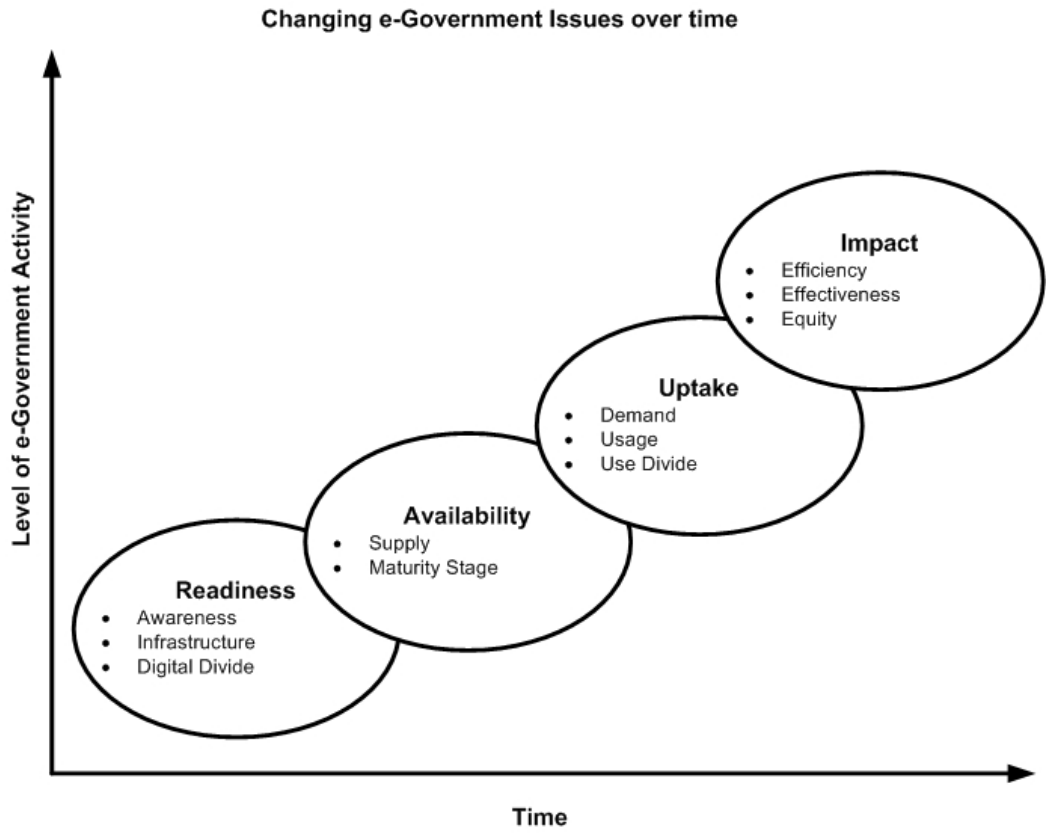

Figure 9. Changing e-Government issues of over time (Heeks, 2006b)

It is important to realize that country rankings from different benchmarking studies are probably based on different definitions of what is being measured. The different motives and targets of the e-Government benchmarking studies result in different approaches to performance measurement. These studies differ in focus, in scope and in the type of measurement criteria used (input, output, usage, impact and environmental indicators) (Janssen, Rotthier, & Snijkers, 2004).

Many of the e-Government benchmarking studies focus on the results (applications in the front office) rather than focus on the processes (back-office integration, intra- and intergovernmental information sharing, database development etc.). There is a gap between the demand for and the supply of e-Government

performance information. Information supplied is often focuses in a superficial way on the amount (and not the quality) of e-Government information as the crucial criteria of success (Janssen et al., 2004).

Table 20. Classification of e-Government Benchmarking Studies (Janssen et al., 2004)

e-Government Benchmark Studies	Scope	Description
Supply Studies	Service Delivery on the internet	Studies online service delivery
Demand Studies	Service Delivery on the internet	Studies e-participation
Information Society studies	Use of ICT in the public sector	Studies enabling environment for ICT
e-Government indicator studies	Use of ICT in the public sector	Studies indicators to monitor broader aspects of ICT development

Table 21. Classification of e-Government Measurement Studies (Kunstelj & Vintar, 2004)

Evaluation	Remarks
e-readiness	E-readiness approaches measures the enabling factors for IT, indicate the readiness of individual players (government, citizens and businesses) to participate in the electronic world. On the government's side this is mainly an issue relating to strategies, policies and action plans for the introduction and development of e-Government, IT use policies, the adoption and use of information infrastructure. On citizens and businesses aspects include primarily ownership, interests and the level of use of information infrastructure, reasons for their under-use and opinions on the development of e-Government in general etc.
front-office (supply side)	Supply-side approaches entail evaluating online supply. These approaches generally investigate availability, level of development, quality and other characteristics of individual websites, and portals as well as particular c-services and information content.
front-office (demand side)	Demand-side approaches study the field from the point of view of the users (citizens and businesses). This kind of research primarily involves investigating actual use of websites, portals, e-services, information content and other elements of supply, the level of interest in use and reasons for not using services as well as evaluations of the quality of services as perceived by the users and evaluation of their perceptions, requirements and needs.

back-office	Back-offices evaluation approach assesses the adoption and use of different information systems including data sharing and exchanging technologies (databases, document management, process and workflow management. data sharing and exchange between organizations.
effects and impacts	Effects and impact evaluation include assessments of the impact of e-Government on economic, social arid democratic processes, such as cost and benefit analyses, impact on organization, work methods, etc.

Table 22. Indicator of e-Government Measurement (Janssen et al., 2004)

Indicators	Description	Examples of Indicators
Input indicators: Most studies limit themselves to a statistic of public IT spending, per capita or as a percentage of GDP.	Measure the resources countries have invested in e-Government.	• Amount of financial resources devoted to e-Government. • IT / e-Government spending as % of GDP. • Amount of resources devoted to Research and Development. • Amount of public resources devoted to internet infrastructure.
Output indicators: The indicators used try to measure the online presence and complexity of services. Complexity is often measured with the categories information, interaction, transaction and integration.	Measure the amount of e-Government applications realized.	• Number of online services for citizens • Number of online services for businesses • Percentage of government departments that have a website • Percentage of government websites that offer electronic services
Usage / Intensity indicators: Provide good monitoring instrument for governments to evaluate the success of different applications and make corresponding strategy decisions (indicators for information seeking, information provision, and transactions).	Measure the actual usage of e-Government by citizens / businesses.	• Number of individuals that have made use of electronic services offered • Number of businesses that have made use of electronic services offered • Percentage of citizens that has visited government websites to search for information • Number of businesses that have made payments online • Percentage of internet traffic that pertains to electronic service delivery
Impact / Effect indicator: Impact indicators go further than the demand side and are used in	Measure the impact e-Government such as changes in processing time or waiting time.	• Reduction of waiting time at government counter x by y % • Decrease in case processing

studies that measure end user satisfaction and in studies that evaluate government organization's efforts. (actual satisfaction of end users,		time at government organization x by y % • Citizen/business satisfaction levels concerning e-Government • Survey-type questions
Environmental / Readiness indicators: measure the preconditions of a successful e-Govemment such as ICT infrastructure, ICT skills, trust in ICT and the legal environment.	Measure the countries readiness for the Information Society and its consequences	• ICT penetration rates (pc, internet, mobile phone) private households, work, schools • Indicator that measures 'fear of invasion of privacy' • Online shopping rates as an indicator of trust in online environments • Indicator that measures 'quality of legislation concerning the information society' • Telephone tariffs, GSM tariffs, Internet access tariffs

Selected Examples of e-Government Measurement Studies

Table 23. Selected Examples of e-Government Measurement Studies

(Federal CIO Council, 2002)	US Chief Information Office releases the Value Measuring Methodology, a guide for measuring the values and benefits of electronic services to be used by federal agencies	October 2002
(The Performance Institute, 2002)	Performance Institute, a Washington based think tank, publishes the report Creating a Performance Based Electronic Government	October 2002
(The National Office for the Information Economy, 2003)	Australian National Office for the Information Economy (NOIE) releases a very extensive study on the benefits of e-Government	April 2003
(Intergovernmental Advisory Board, 2003)	US General Services Administration (GSA) issues a report on High Payoff in Electronic Government, where e-Government impact areas are classified	May 2003
(Gartner Research, 2003)	Gartner presents the 'Public Value of IT' (PVIT) methodology to measure IT investments impacts over time on service level, operational efficiency and political return	July 2003
(UK Office for Government Commerce, 2003)	The UK Office for Government Commerce releases a guide on the measurements of e-Government costs and benefits	August 2003
(Deloitte Research, 2003a)	Deloitte Research publishes the report 'Citizen Advantage' proposing a methodology to measure the benefits of e-Government for businesses and citizens	September 2003
(European Commission DG Information	European Commission's IDA programme, predecessor to IDABC, introduces the IDA Value of Investment (VOI) methodology focusing on the traditional return on investment	October 2003

Society, 2003)	(ROI) analysis but also on qualitative benefits	
(Danish Digital Task Force, 2004)	Danish National e-Government Strategy contains clearly identified targets and their respective measurement indicators	February 2004
(Stowers, 2004)	IBM Centre for the Business of Government publishes the paper Measuring the Performance of e-Government	March 2004
(German Federal Ministry of the Interior, 2004)	The IT Department of the German Federal Ministry of the Interior releases version 4.0 of its WiBe methodology for the assessment of ICT project economic efficiency	August 2004
(Treasury Board of Canada, 2004)	Treasury Board of Canada Secretariat releases a study on the measurement of e-Government performances	October 2004
(eEurope eGovernment Advisory Group, 2004)	The CoBrA recommendations issued by the eEurope subgroup for e-Government mention the need for a "common measurement framework"	October 2004
(Capgemini, 2004)	A report commissioned by the Dutch Presidency of the European Public Administration Network ("Does eGovernment pay off?"), identifies several areas of e-Government benefits	November 2004
(European Commission DG Information Society, 2004b)	The eGovernment Unit in DG Information Society and Media publishes Top of the Web survey of citizens and businesses identifies time saving and increased flexibility as benefits of e-Government clearly perceived as such by the public	December 2004
(IDABC eGovernment Observatory, 2005)	EU IDABC eGovernment Observatory releases a background research paper on the impact of e-Government on competitiveness, growth and jobs.	February 2005
(French Agency for the Development of Electronic Administration, 2005)	The French Agency for the Development of Electronic Administration (ADAE) unveils the new Mareva methodology to measure the benefits of the national e-Government Program ADELE	March 2005
(European Commission DG Information Society, 2006a)	European Commission DG Information Society and Media study on eGovernment Economics Project (eGEP) Measurement Framework	May 2006
(Heeks, 2006a)	Study by Institute for Development Policy and Management, University of Manchester "Benchmarking eGovernment: Improving the National and International Measurement, Evaluation and Comparison of eGovernment"	July 2006

Selected Examples of Evaluation and Benchmarking of e-Government

Table 24. Selected Examples of Evaluation and Benchmark of e-Government (Sakowicz, 2003) and (Government and Technology Partnerships, 2004)

Project name	The scope of analysis	Evaluation Criteria	Reference
Accenture	E-government	Engaging Citizens and	(Accenture, 2004a)

	leadership	Businesses in online Government	
Brown University	e-Government	Online delivery of end-to-end information and services on national government websites	(West, 2006)
World Economic Forum and INSEAD	Electronic Commerce	Availability and use of online technology for e-commerce	(INSEAD, 2003)
e-Europe, EU	All tiers of government	E-government is measured by comparison of on-line development of 20 key public services.	(European Commission DG Information Society, 2005)
United Nations	e-Government	Public value, Official national online presence, telecommunications infrastructure, human development capacity, and e-participation.	(United Nations Division for Public Economics and Public Administration, 2001)
e-Government Benchmarking Electronic Service Delivery	e-Government issues, such as accessibility and interoperability	Study has focused on a range of back office and wider e-Government issues, such as accessibility and interoperability.	(Office of the e-Envoy, 2001)
Economist Intelligence Unit	e-Readiness	Tendency of business environment for commercial opportunities.	(Economist Intelligence Unit, 2005)
Momentum Research Group	e-Government Customer satisfaction	Application and service relevance; Citizens and business satisfaction; Preservation of public trust.	(Momentum Research Group, 2000)
Taylor, Nelson, Sofres (TSN)	e-Government	Citizen uptake of E- Government Services	(Dalziel, 2004)

Review of e-Government Performance Models

In this section, some of prominent e-Government models are discussed which includes models such as eGEP Measurement Framework, Public Value of e-Government, Value Measuring Methodology, US Performance Reference Model Framework, Canada e-Government Performance Measurement Model, European e-Government Performance Measurement Model.

Value Measuring Methodology Framework for e-Government

Value Measuring Methodology (VMM) decision framework consists of three elements such as value (benefits), cost, and risk structures. Each of these elements must be understood to plan, justify, implement, evaluate, and manage an investment. Value Structure (Direct User Value, Social Value, Government Financial Value, Government Operational and Foundational Value, and Strategic/Political Value) allows management to gain a prioritized understanding of the needs of direct users, government stakeholders, and society. Risk structure provides the starting point for identifying and inventorying potential risks factors that may jeopardize an initiative's success and ensures that plans for mitigating their impact are developed and incorporated into. Cost Structure is a hierarchy of elements created specifically to accomplish the development of a cost estimate and it will guides refinement and improvement of the estimate during the progress of planning and implementation (Federal CIO Council, 2002).

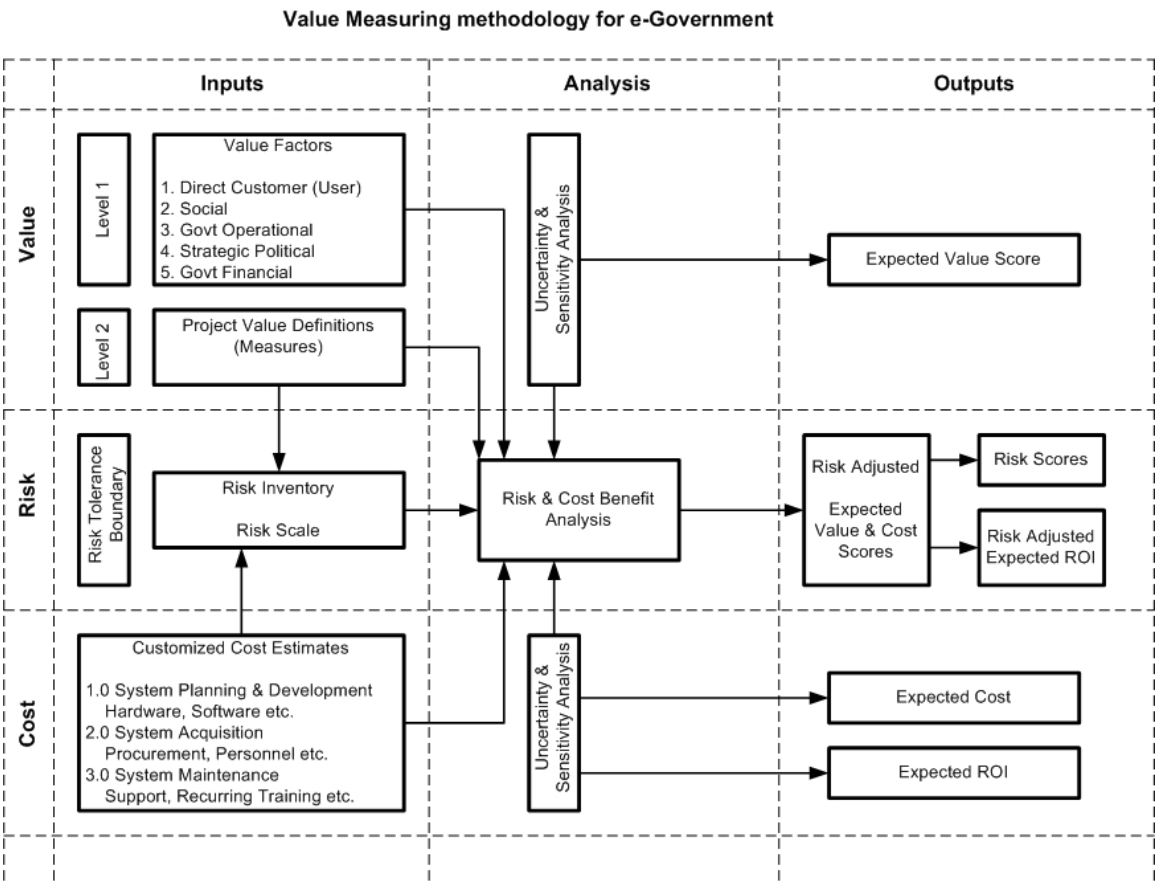

Figure 10. Value measuring methodology framework for e-Government (Federal CIO Council, 2002)

eGEP Measurement Framework

The Measurement Framework Model is built around the three value drivers of efficiency, democracy, and effectiveness and elaborated in such a way as to produce a multidimensional assessment of the public value potentially generated by e-Government, not limited to just the strictly quantitative financial impact, but also fully including more qualitative impacts (European Commission DG Information Society, 2006b).

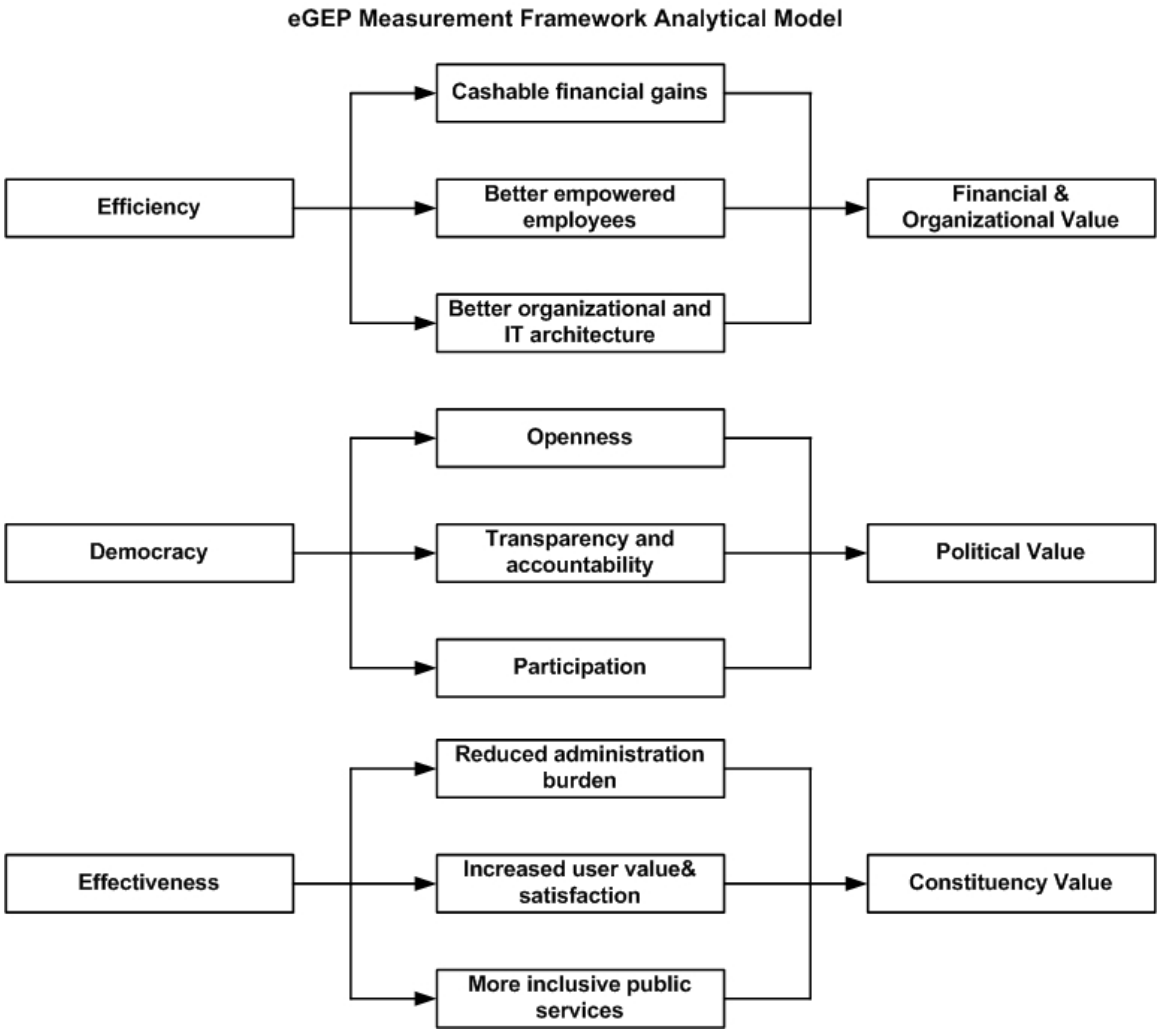

Figure 11. eGEP measurement framework (European Commission DG Information Society, 2006b)

eGEP Measurement Framework presents a neat and exhaustive way of looking at three different areas of impact, efficiency (financial and internal organizational value), effectiveness (constituency value) and democracy (political value), defined in terms of openness, transparency and accountability, and participation (European Commission DG Information Society, 2006b).

The eGEP measurement model is based on the following theoretical framework. e-Government will contribute to innovation and change in the public sector because of

organizational change and public employee re-training. e-Government will enable public administrations to pursue the provision of online services, improving their internal functioning, enhancing democracy, increasing the quality of services and opportunities offered to citizens and businesses. e-Government will produce consolidated productivity gains and impact on GDP growth (European Commission DG Information Society, 2006b).

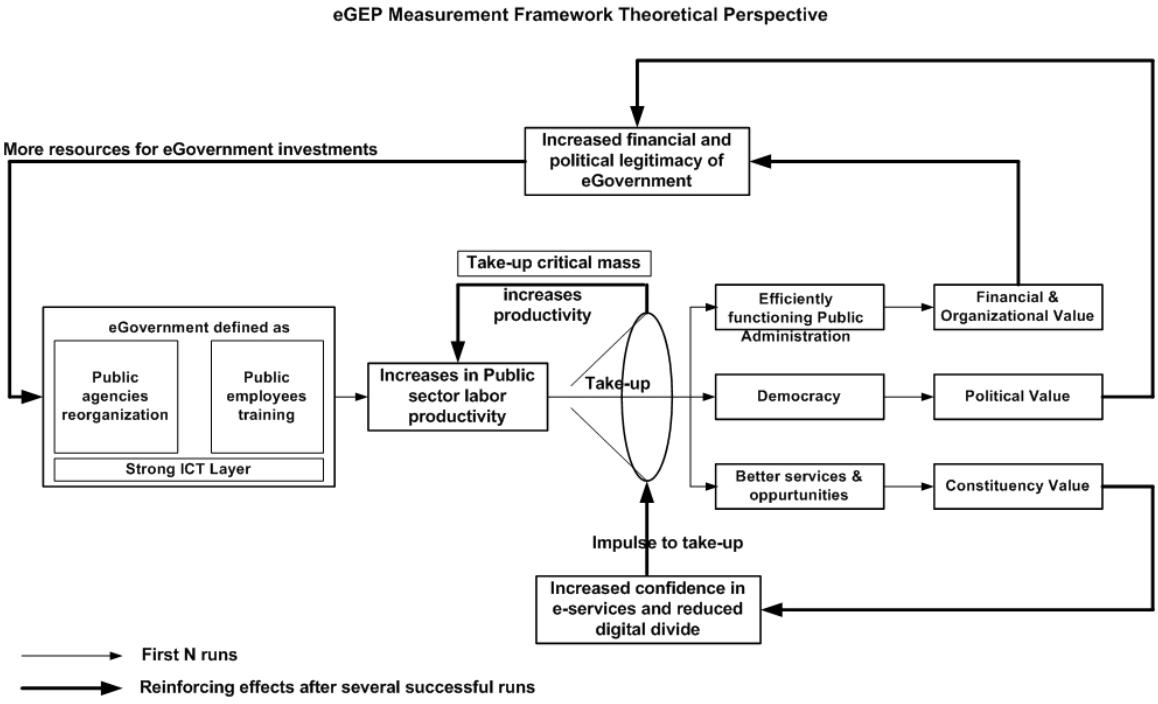

Figure 12. eGEP measurement framework theoretical perspective (European Commission DG Information Society, 2006b)

Public Value of e-Government

Kearns (2004) identified three important sources of public value for e-Government services as high quality services, outcomes and trust. Public value can be used to aid decision making, to assess performance and to provide a bridge between the technology and wider policy communities.

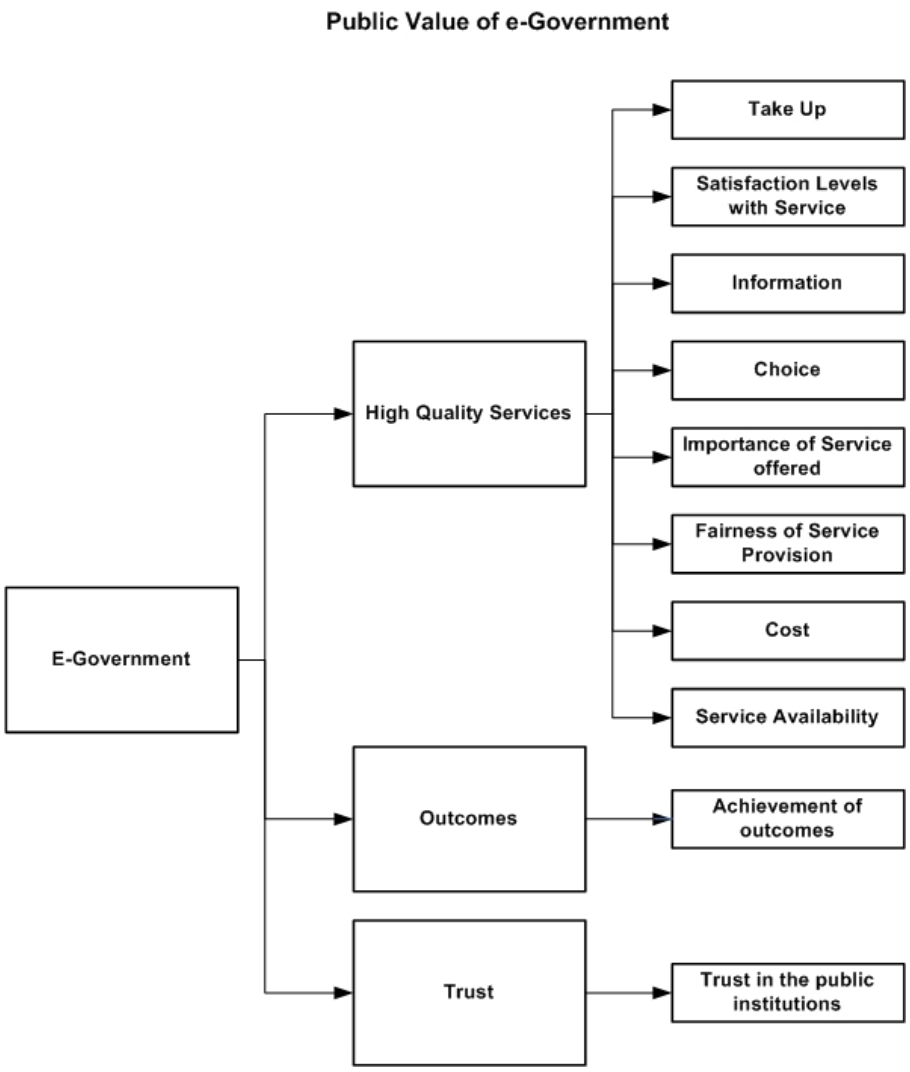

Figure 13. Public value of e-Government (Kearns, 2004)

Perceptions of services are driven by a series of factors such as their availability, the satisfaction of users, the perceived importance of the service and the fairness of its provision and finally its cost. Achievements of outcomes are seen as desirable by the public such as improvements in health, reduced poverty or environmental improvements. Trust in public institutions is an important source of public value, making citizens more likely both to accept government action and to feel a sense of association with it (Kearns, 2004) .

US Performance Reference Model Framework

The Performance Reference Model (PRM) is a reference model or standardized framework to measure the performance of major IT investments and their contribution to program performance. The PRM attempts to leverage the best of existing approaches to performance measurement in the public and private sectors, including the Balanced Scorecard, Baldrige Criteria, Value Measurement Methodology, program logic models, the value chain, and the theory of constraints.

The PRM is currently comprised of four measurement areas:

- Mission and Business Results: intended to capture the outcomes that agencies seek to achieve. These outcomes are usually developed during the agency budget and strategic planning process.
- Customer Results: intended to capture how well an agency or specific process within an agency is serving its customers and ultimately citizens.
- Processes and Activities: intended to capture the outputs that are the direct result of the process that an IT initiative supports.
- Technology: is designed to capture key elements of performance that directly relate to the IT initiative. An IT initiative generally can include applications, infrastructure, or services provided in support of a process or program.

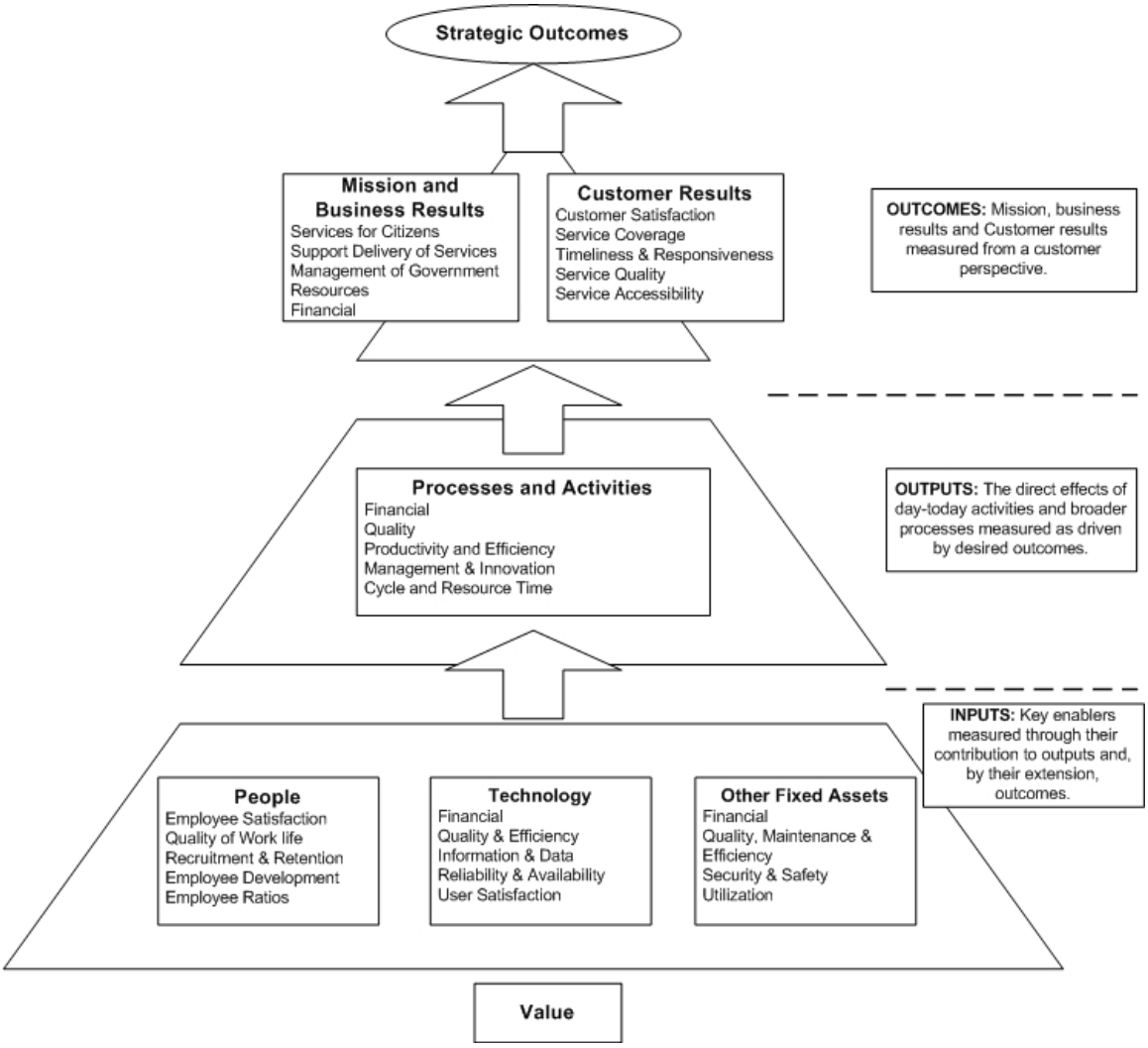

Figure 14. Performance reference model framework (Federal Enterprise Architecture Program Management Office, 2006)

European e-Government Performance Measurement Model

The model was proposed as part of survey conducted by Capgemini on behalf of the European Commission to assess the progress of Europe e-Government. The study evaluated the availability of public services for citizens and businesses through the results of the front office approach only (Internet). It did not evaluate organizational e-Government action like the e-Government re-designing of back-office procedures, nor

service availability through other channels, nor the adoption and the use of these services, nor the impact of the e-Government programs (European Commission DG Information Society, 2005).

The study proposes a more holistic e-Government measurement model which includes measurement of e-Government Readiness, Quality multi channel choice (Front office) , Back office fulfillment , Adoption & Use (Stakeholder participation) and Impact on Public Value.

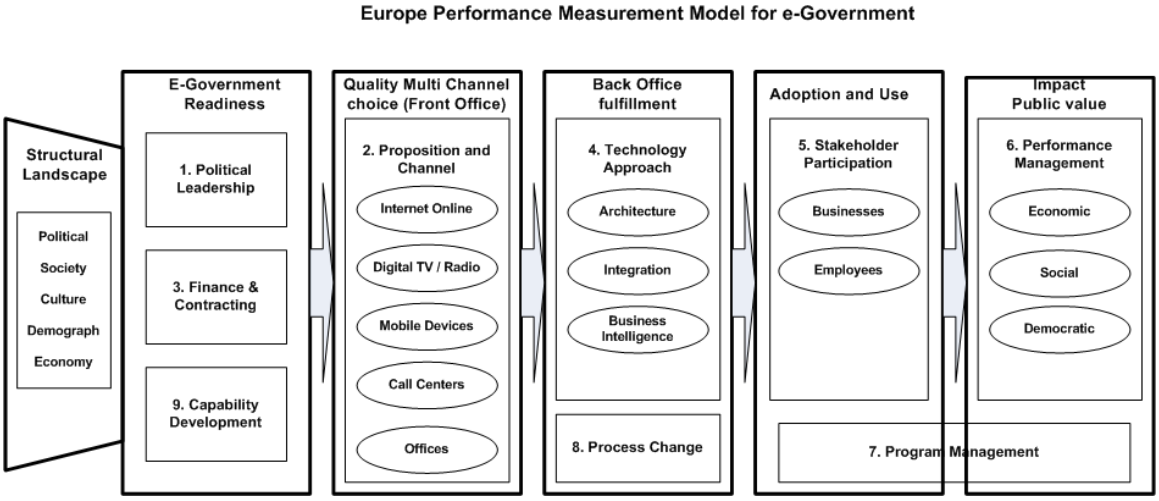

Figure 15. European e-Government performance measurement model (European Commission DG Information Society, 2005)

Canada e-Government Performance Measurement Model

The Canada e-Government Performance Measurement Model uses logic model to identify the causal linkages between the activities of a policy, program, or initiative, the outputs, and the achievement of its outcomes to highlight the steps that would demonstrate progress towards the final goal, and to help determine where to focus measurement efforts. The model shows the relationship between work on gateways and

integrated Web portals, services, infrastructure, and policies, and the overall objective of increased satisfaction with federal services while at the same time improving the operational efficiency of the Government of Canada. The model consists of four main components such as integrated web portals (single point of access to on-line information and services), On-line services (services that touch the lives of the greatest number of Citizens), a common infrastructure (common network, support, authentication, information management, electronic payment and other services in response to department and agency needs) and leadership & direction (policies and strategies to direct and coordinate the federal presence on-line, and to guide the development of key aspects of on-line service delivery) (Treasury Board of Canada, 2004).

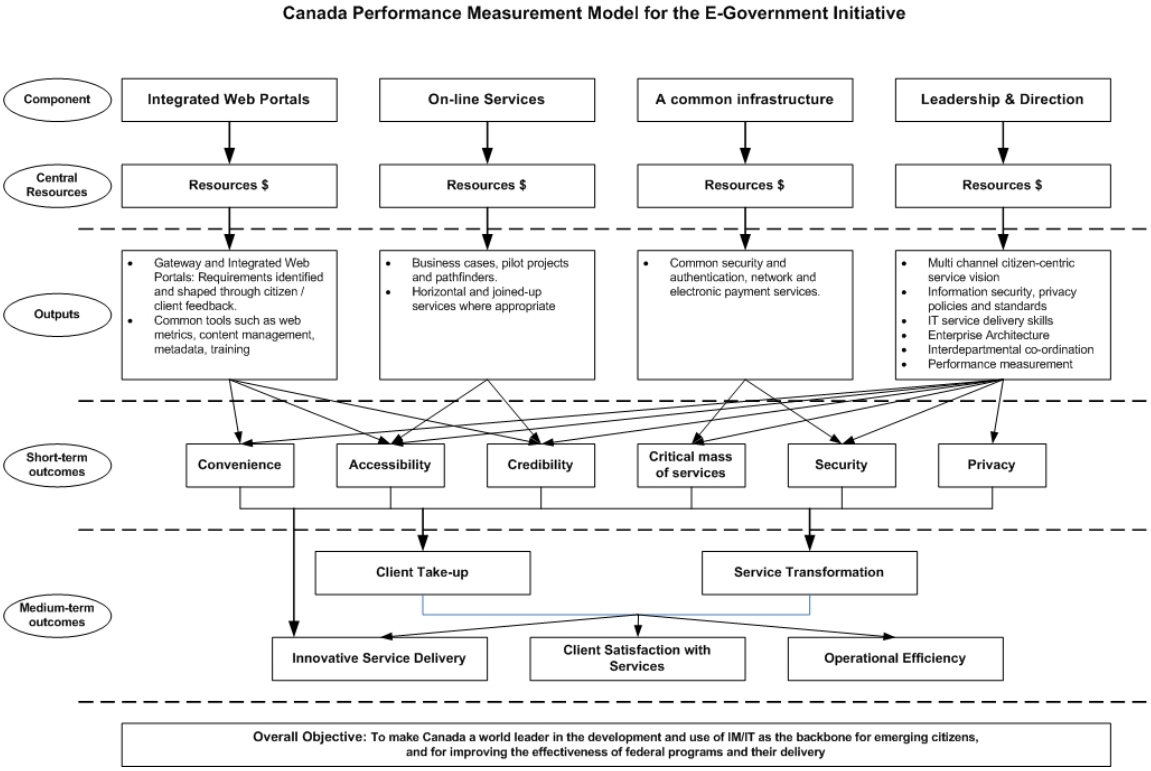

Figure 16. Canada e-Government performance measurement model (Treasury Board of Canada, 2004)

Comparison of e-Government Performance Models

Table 25. Comparison of e-Government Performance Models

Performance measurement models for e-Government	Description	Remarks
Value Measuring Methodology Framework for e-Government	Value Measuring Methodology (VMM) decision framework consists of three elements such as value (benefits), cost, and risk structures.	The measurements does not account for the measurement of trust in the e-Government.
eGEP Measurement Framework	eGEP Measurement Framework measure three different areas such as efficiency (financial and internal organizational value), effectiveness (constituency value) and democracy (political value).	The measurements does not account for the measurement of trust in the e-Government.
Public Value of e-Government	Public value can be used to aid decision making, to assess performance and, in the e-Government context, to provide a bridge between the technology and wider policy communities.	The measurements does not account for the internal business process improvement and learning and growth perspective.
US Performance Reference Model Framework	The performance reference model is a standard framework to measure the performance of major IT initiatives and their contribution to program performance. Key measurements include Technology, Human Capital and Other fixed assets.	The measurements does not account for the measurement of trust in the e-Government.
Canada e-Government Performance Measurement Model	The performance measurement concentrate on the five components of the GOL Initiative such as Policy; Gateways and Clusters; On-line Services; Secure Channel; and Organizational Readiness Office.	The measurements does not account for the internal business process improvement and learning and growth perspective.
European e-Government Performance Measurement Model	This study measures the results of the front office approach, considering only the online public service offering.	It evaluates neither organizational e-Government action like the e-Government re-designing of back-office procedures, nor service availability through other channels, nor the adoption and the use of these services, nor the impact of the e-Government programs.

Summary

Traditional methods of measuring e-Government impact and resource usage fall short of the richness of data required for the effective evaluation of e-Government strategies. Performance measurement is tied into an organization's strategic planning process as a way of measuring the implementation of its goals and objectives derived from an organization's mission. Most of the Current studies lack the measurement based on the Mission and Goals of the e-Government initiatives.

The current approaches do not support a comprehensive c-government assessment. The partial evaluations cannot give policy makers evaluation elements for their decisions. e-Government performance measurement results will be an essential tool for policy makers to limit the margins for error when putting future strategies in place.

Web sites and related business processes and information systems are so complex that it is difficult for governments to determine adequate measures for evaluating the efficiency and effectiveness of the spending of their public money. The value of a government investment has to be measured not only by its direct return to government but also by its return to the people on whose behalf the investment is actually made.

After examining the current e-Government measurement practices in the literature and investigating some theoretical work in this field, the results show an unsatisfactory picture on the measurement of e-Government. It would be beneficial for both the citizens and the governments if a theoretical framework would be developed and a more or less standardized measurement instrument could become available.

Chapter 3

Performance Measurement in Private and Public Sector

What is Performance Management?

Improvement and Development Agency (I&DeA, 2006a) defines performance management as taking action in response to actual performances to make outcomes for users and the public better than they would otherwise be.

Performance management helps to:

- prioritize what gets done and ensure there are sufficient resources to do it
- ensure local authorities provide value for money
- motivate and manage staff
- identify and rectify poor performance at an early stage
- learn from past performance and improve future performance
- increase user and public satisfaction

Performance management can refer to managing the performance of an organization or an individual. Performance information should help managers to understand how well the organization, parts of the organization, and individuals are performing (Audit Commission, 2001).

Performance management is what you do to improve or what you do to maintain good performance (I&DeA, 2001). Effective performance management should demonstrate that:

- you know what you are aiming for
- you know what you have to do to meet your objectives

- you know how to measure progress towards your objectives
- you can detect performance problems and remedy them

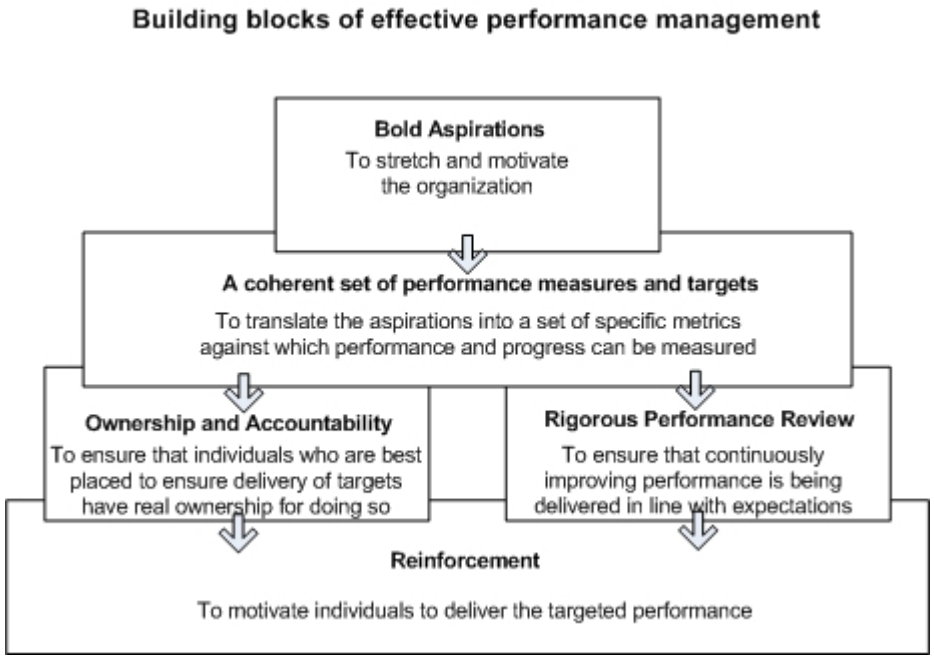

Figure 17. Building blocks of effective performance management (I&DeA, 2001)

Performance Measures

All effective organizations measure their performance in order to know how well they are performing and to identify opportunities for improvement (I&DeA, 2002). Performance information indicates how well an organization is performing against its aims and objectives. Knowing how well the organization is currently doing is essential in developing strategy and policies to meet the organization's aims. (Audit Commission, 2001).

Why Measure Performance Measures?

The fundamental objectives of performance measurement in public sector are

Improved public services: Performance measurement is one essential element in performance management to secure continuous improvement in public services.

Improved accountability: Clarifying the outputs and outcomes that are achieved for the resources used makes it easier to hold organizations accountable (Audit Commission, 2000a).

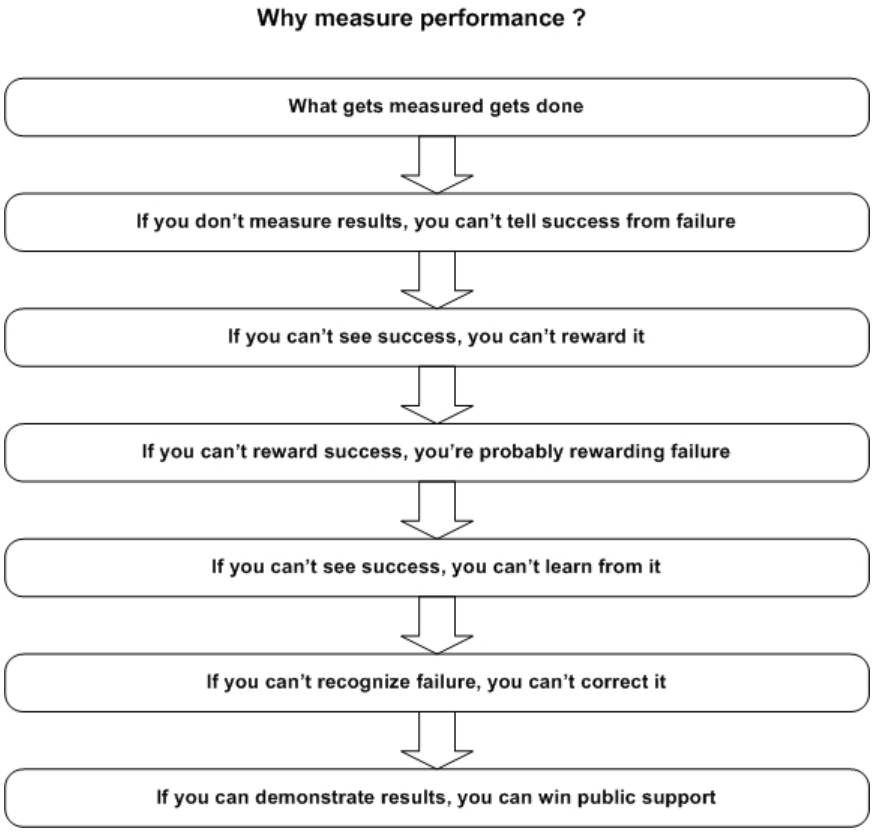

Figure 18. Why measure performance (Osborne & Gaebler, 1993)

Table 26. Purposes for Measuring Performance (Behn, 2003)

Purpose	**Answers**
Evaluate	How well is my program / Projects performing?
Control	How can I ensure that my subordinates are doing the right thing?

Budget	On what programs, people, or projects should my agency spend the public's money?
Motivate	How can I motivate line staff, middle managers, nonprofit and for-profit collaborators, stakeholders, and citizens to do the things necessary to improve performance?
Promote	How can I convince political superiors, legislators, stakeholders, journalists, and citizens that my agency is doing a good job?
Celebrate	What accomplishments are worthy of the important organizational ritual of celebrating success?
Learn	Why is what working or not working?
Improve	What exactly should who do differently to improve performance?

Basic Building Blocks of Performance Measurement System

The basic building blocks of performance measurement systems can be classified as (a) Measures of efforts (b) Measures of accomplishments (c) Measures that relates efforts to accomplishments and (d) Explanatory information (Governmental Accounting Standards Board, 2003).

Table 27. Basic Building Blocks of Performance Measurement Systems (Governmental Accounting Standards Board, 2003)

Elements	**Categories**
Measures of efforts	Efforts are the amount of financial and non-financial resources (in terms of money, material, and so forth) that are put into a program or process.
Measures of accomplishments	Accomplishment measures report what was provided and achieved with the resources used. There are two types of measures of accomplishments—outputs and outcomes. Outputs measure the quantity of services provided. Outcomes measure the results of providing those outputs.
Measures that relate	Efficiency measures that relate efforts to outputs of services are

efforts to accomplishments	indicators measure the resources used or cost (for example, in dollars, employee-hours, or equipment used) per unit of output. Cost-outcome measures that relate efforts to the outcomes or results of services measure the cost per unit of outcome or result.
Explanatory information	Explanatory information includes both quantitative and narrative information that can help users to understand reported performance measures, assess the entity's performance, and evaluate the significance of underlying factors that may have affected the reported performance.

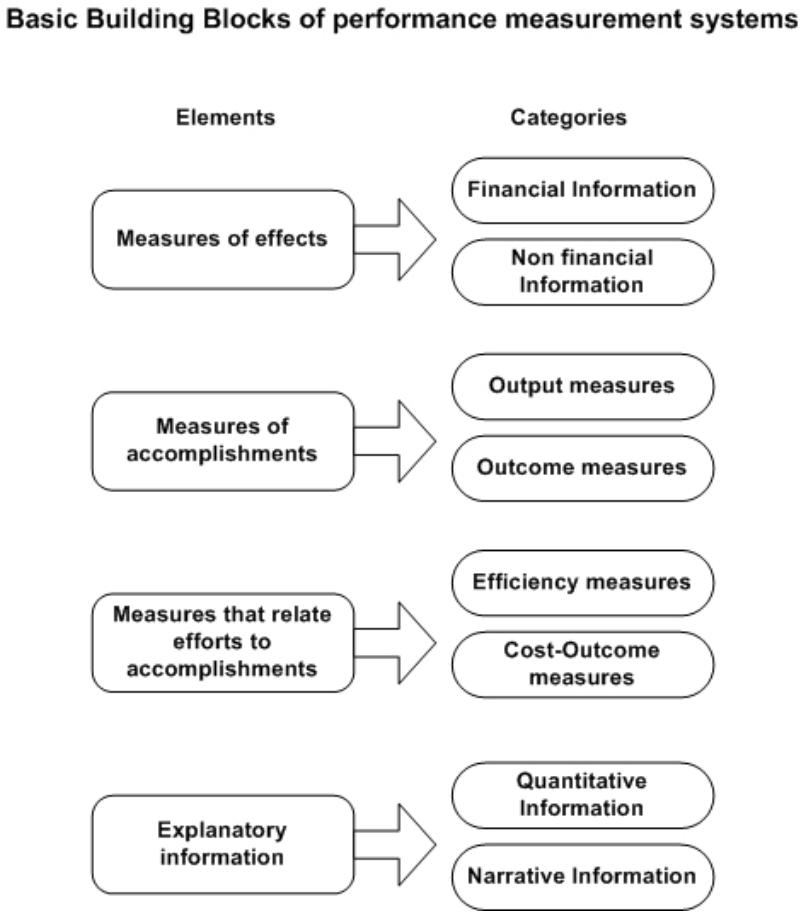

Figure 19. Basic building blocks of performance measurement system (Governmental Accounting Standards Board, 2003)

Components of Performance Measurement

Putting performance measurement into place in an organization involves more than producing a set of high quality measures. This diagram sets out elements that need to be in place for performance measurement to be most useful.

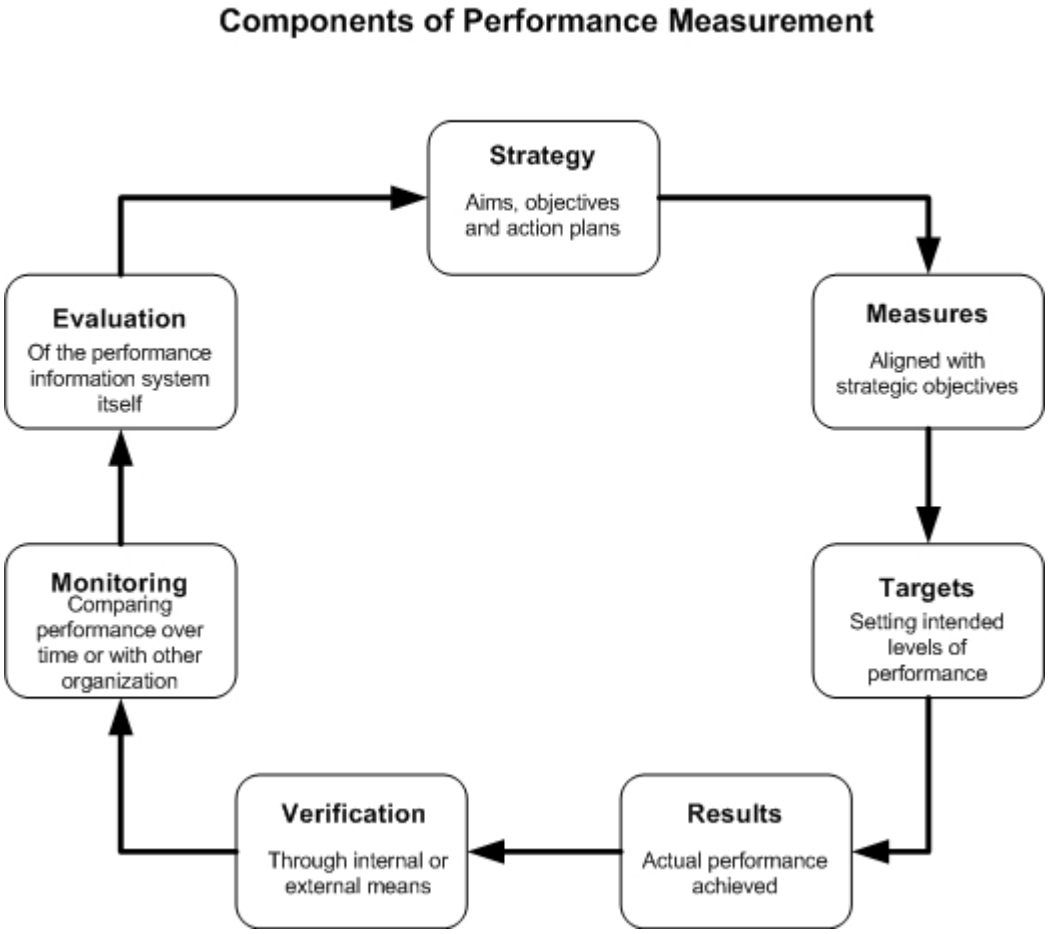

Figure 20. Components of performance measurement (Audit Commission, 2001)

One common way of developing performance indicators is using the three dimensions of economy, efficiency and effectiveness (Audit Commission, 2000b).

- Economy: acquiring human and material resources of the appropriate quality and quantity at the lowest cost (staff, materials, premises)

- Efficiency: producing the maximum output for any given set of resource inputs or using the minimum inputs for the required quantity and quality of service provided
- Effectiveness: having the organization meet the citizens' requirements and having a program or activity achieve its established goals or intended aims'.
- Cost: the money spent to acquire the resources
- Input: the resources (staff, materials and premises) employed to provide the service
- Output: the service provided to the public, for example, in terms of tasks completed
- Outcome: the actual impact and value of the service delivery

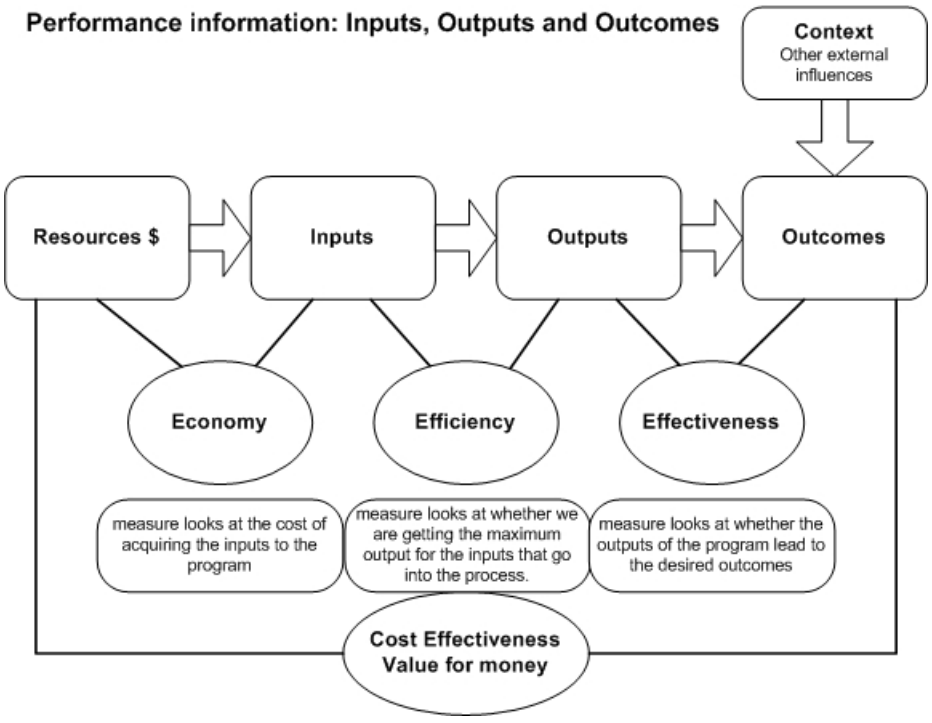

Figure 21. Performance information: inputs, outputs and outcomes (Audit Commission, 2001)

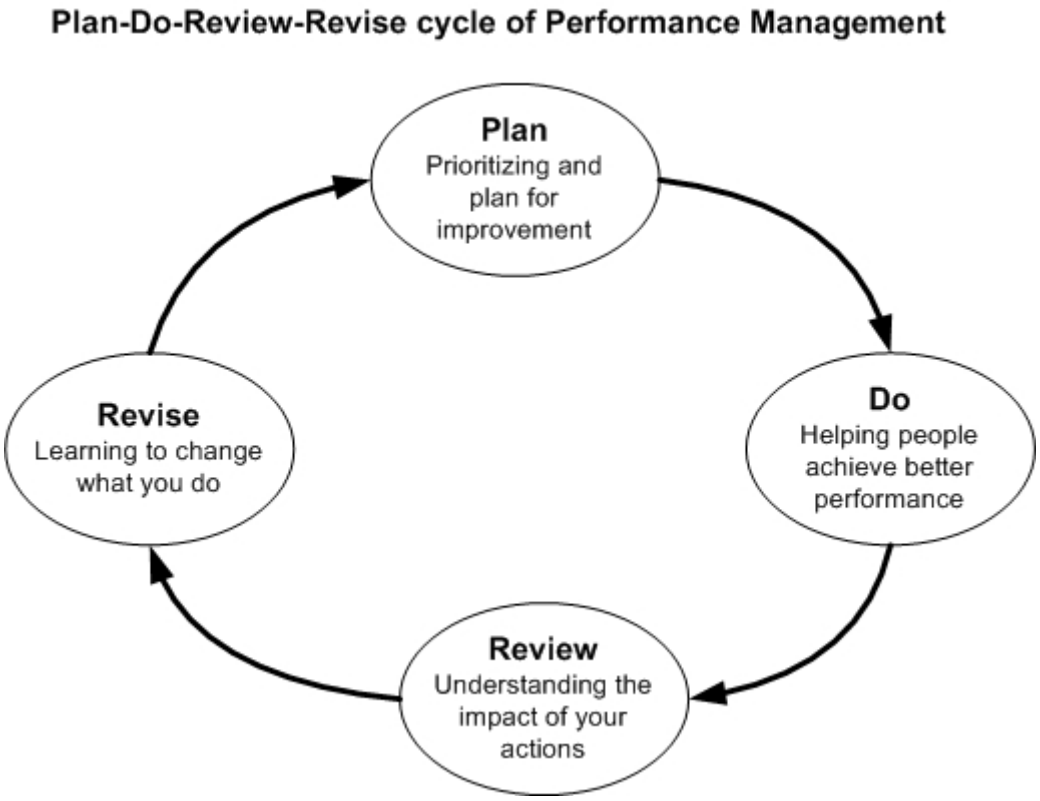

Figure 22. Plan-Do-Review-Revise cycle of performance management (I&DeA, 2006a, p. 8)

Levels of Performance Measurement

Performance measurement can be done at different levels like Enterprise, Functional, Program and Project level. As the measurement moves down to program / project level, the measurement level details also increases. Measurements are more frequent at the Program / Project level and less frequent at the Enterprise level. At the enterprise level, the focus is on mission results, and information is needed to choose policy directions and make mission decisions. At the Functional Level, the focus is on unit results where information is needed to manage and improve operations. At the program/project level, activity and task information is critical to make tactical decisions and execute management decisions (Department of Defense, 1997).

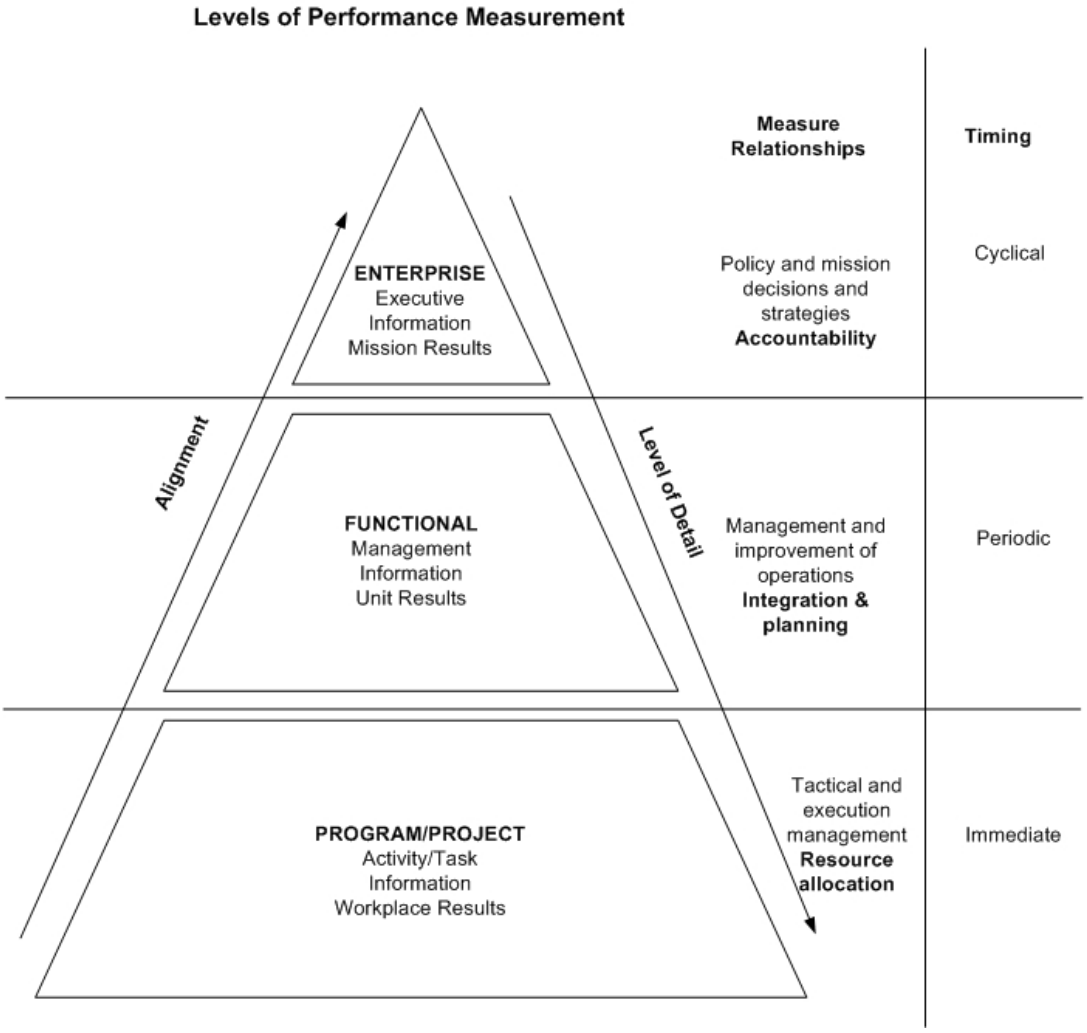

Figure 23. Levels of performance measurement (Department of Defense, 1997)

Performance Measurement Framework

A framework for managing performance can help to ensure that people understand where your organization is standing. Public sector needs an entire performance measurement framework to be able to monitor a range of functions. Outcomes can only rarely be measured in terms of a single performance indicator (PI), so

we often need to identify a group that collectively provides a picture of performance (I&DeA, 2006a, p. 16).

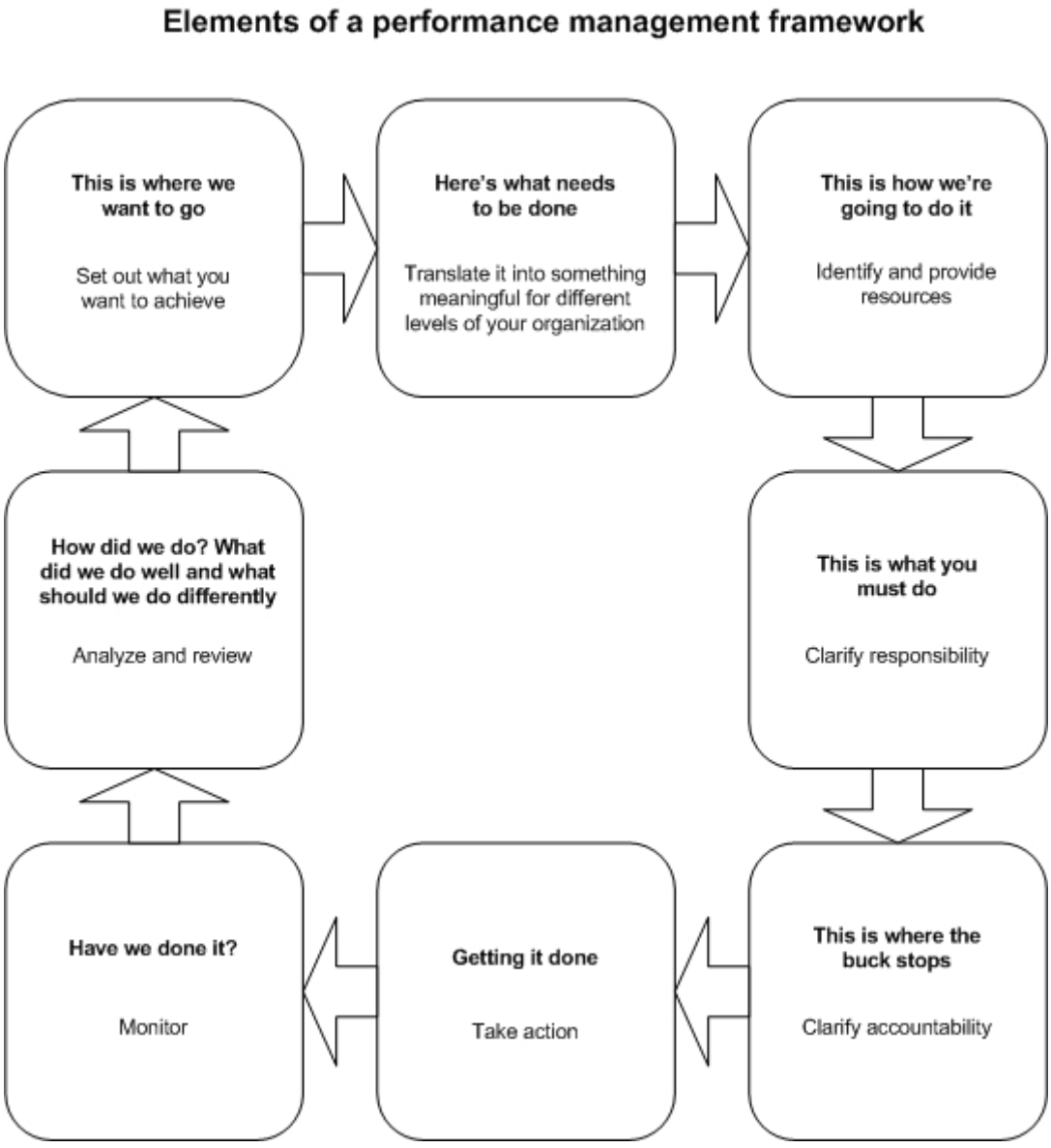

Figure 24. Elements of a performance management framework (Audit Commission, 2002)

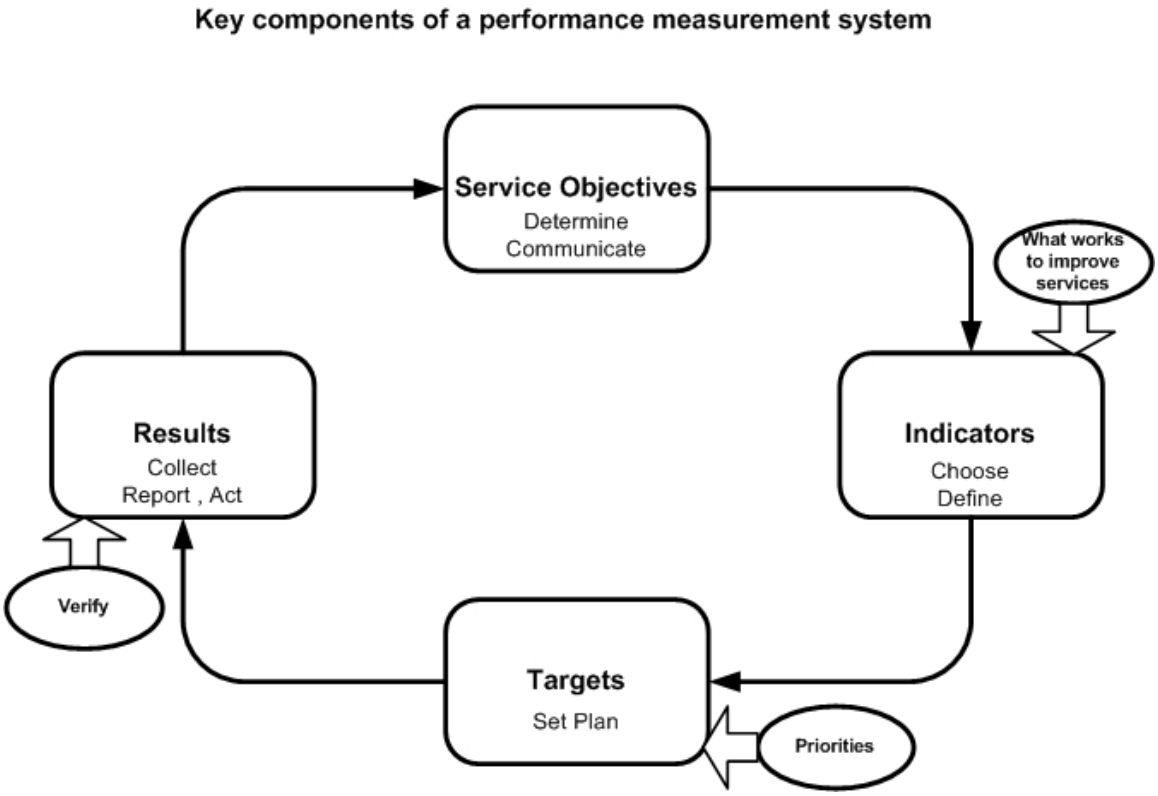

Figure 25. Key components of a performance measurement system (Audit Commission, 2000a)

Criteria in Designing an Effective Performance Measurement System

Criteria in designing an effective performance measurement system is defined using the acronym FABRIC (Focused, Appropriate, Balanced, Robust, Integrated, Cost effective) (Audit Commission, 2001).

Table 28. Criteria in Designing an Effective Performance Information System (Audit Commission, 2001).

Focused	The performance information system should focus on the organization's aims and objectives.
	Is the performance information focused on the core aims and objectives of the organization?
	What actions could the performance information provoke management to take? (If the answer's none then don't collect the information.)
	Why is the information being collected?
Appropriate	The information being collected should be appropriate to, and useful

	for, the stakeholders who are likely to use it.
	Do stakeholders receive the performance information they need?
	Is it the right information presented in the right way for each group of users?
Balanced	The performance measures should give a balanced overall picture of what the organization is doing, covering all significant areas of work.
	Do measures cover all significant areas of work in the organization?
	Are both financial and non-financial measures collected?
	Are indicators of future performance included as well as measures of past results?
Robust	The performance information system should be able to withstand organizational changes or individuals leaving.
	Can the system survive changes in personnel and changes in the structure of the organization?
	Are there any key people without whom the performance information system couldn't survive?
Integrated	The performance information system should be integrated into the organization, being part of the business planning process and management processes.
	Are the results of the performance information system monitored and used as part of the business planning and management process?
	Is there consistent performance information at all levels of the organization?
	Are performance measures for individuals and teams, consistent with measures for the organization?
	Do people within the organization own the system? Do they take notice of the results and use them? Did they contribute to its design?
Cost Effective	The resources put into collecting performance information should be proportionate to the benefit which the information brings.
	Are the resources put into collecting performance information proportionate to the benefit of the organization?
	What is the actual cost to the organization of the performance information? (Including the burden of form filling, and time spent reviewing the information.)

Principles of Effective Performance Measurement

The principles of effective performance measurement can be classified into six key principles (Audit Commission, 2000a).

Table 29. Principles of Effective Performance Measurement (Audit Commission, 2000a).

Clarity of purpose	It is important to understand who will use information, and how and why the information will be used. • Have the stakeholders with a need for performance information been identified? • Have the information needs of each group of stakeholders been identified, and indicators devised? • Have the indicators been justified by linking them to the decisions that the stakeholder or user might make? • Has a coherent set of indicators been developed?
Focus	Performance information should be focused on the priorities of the organization - its core objectives and service areas in need of improvement. • Does the performance measurement system incorporate clear top-level objectives? • Does the organization develop action plans to meet its objectives? • Have indicators or success criteria been devised for each objective? • Does the organization have a balanced mix of long-term and short-term objectives? • Has the impact of other organizations' performance on the corporate objectives been identified, and cross-cutting indicators agreed? • Are the organization's performance indicators used in service reviews? • Are the behavioral implications of performance indicators assessed? • Has the organization differentiated between performance indicators and contextual data?
Alignment	The performance measurement system should be aligned with the objective setting and performance review processes of the organization. • Are performance indicators used throughout the organization? • Do managers understand their organization's strategic objectives, and do their performance indicators relate to the strategic

	objectives? • Does the organization set SMART targets? • Does the organization have a systematic follow-up process if it finds that objectives are not being met? • Have managers contributed to the design of their performance indicators? • Does every user of the information have no more than 20 indicators for one area of responsibility? • Is there a scrutiny process to reduce the risk that organizations will manipulate the data to enhance their reported performance?
Balance	The overall set of indicators should give a balanced picture of the organization's performance. • Is there a balanced set of indicators for each service, and for each management level in the organization? • Does the set of indicators use one or more of the suggested frameworks to ensure balance?
Regular refinement	The performance indicators should be kept up to date to meet changing circumstances. • Is there a regular review of corporate objectives and performance indicators to keep all indicators up to date? Is there a process to critically review the accuracy and relevance of indicators?
Robust performance indicators	The indicators used should be sufficiently robust and intelligible for their intended use. • Are all indicators used by the organization checked to assess their strengths and weaknesses? • Does this assessment include an analysis of the use of the indicator, to determine which characteristics are important?

Criteria for Good Performance Measures

Table 30. Criteria for Good Performance Measures (Audit Commission, 2001)

Each individual performance measure should be:

Relevant	The measure should be relevant to what the organization is aiming to achieve
	Does the measure attempt to capture success in one of the organization's objectives?
	What does the measure tell you about how the organization is performing?
Avoid Perverse Incentives	The measure should not encourage unwanted or wasteful behaviour.
	Does the measure encourage any unwanted behavior? (For example not reporting mistakes.)
	Could you improve performance against the measure without improving performance in real life?
	Does the measure allow innovation? For example, does the measure discourage changing the way a service is delivered?
Attributable	The activity measured must be capable of being influenced by actions which can be attributed to the organization. It should be clear where accountability lies.
	Can the measure be influenced by the organization's actions?
	Is it clear where accountability for the measure lies?
	Is there an estimate of the degree to which the organization affects the measure?
	Could a SMART (Specific, Measurable, Achievable, Relevant, and Timed) target be set against the measure?
Well-defined	The measure should have a clear, unambiguous definition so that data will be collected consistently, and the measure is easy to understand and use.
	Can the measure be expressed clearly, so that it is easy to understand?
	Does the measure have an unambiguous definition, so it can be collected consistently?
Timely	Data should be produced frequently enough to track progress and, and quickly enough for the data to still be useful.
	Does the measure provide information in time for action to be taken?
	What's the lag between the event and information becoming available?
	Does the measure provide information frequently enough to track changes and take actions?
Reliable	The measure should be reliable: accurate enough for its intended use; and responsive to change.
	Is the performance measure accurate enough for its use?
	Has the measure been checked by appropriate specialists? (for

	example statisticians, social researchers, accountants or scientists.)
	Is the measure responsive to change? Will it show significant changes in performance? Will the measure change because of random noise rather than actual performance?
Comparable	The measure should be capable of able to be compared with either past periods or similar programs elsewhere.
	Does the measure allow comparison with past performance?
	Does the measure allow comparison with other organizations delivering a similar service?
Verifiable	The measure should have clear documentation behind it, so that the processes which produce the measure can be validated.
	Given the documentation could an objective outsider come up with the same results?

Common Performance Indicator Pitfalls and How to Avoid Those

Table 31. Common Pitfalls When Setting Up Performance Indicators and How to Avoid Those (Audit Commission, 2000b).

Common Performance Indicator Pitfalls	How to avoid them
Performance indicators that measure activity rather than performance will provide less useful data and information overload.	A focus on the key objectives of the organization will keep attention on the essential goals. From these key objectives, it is important to align indicators to the more operational levels.
Focusing on short-term targets at the expense of long term objectives is a risk, due to pressure for immediate good performance.	The balanced scorecard approach can help to ensure the inclusion of both long- and short-term objectives.
Lack of understanding of outcome measures might lead to this type of performance indicator being underused.	It is worth spending time on developing good outcome measures, though this is not an easy task. The ripple effect can be a helpful method. Measures of processes associated with good outcomes may also be used if outcome measures are not available.
Too many financial measures compared with quality measures can lead to skewed performance and neglect of essential areas.	The balanced scorecard or a similar approach should be considered to ensure the right balance.
Manipulation of data to improve the measured performance is a risk especially when performance is published, ownership of the indicators is weak, or staff reward and censure depend on the indicators.	Perverse incentives can be minimized by setting up counterbalancing performance indicators, verification of data and by involving staff in the construction of indicators.
Danger of specifying data because they may be interesting rather than needed.	Again a focus on the key objectives of the service or function can reduce the risk of ending up with 'nice to know' rather than 'need to know' indicators. But organizations should recognize the possible need for context indicators.
Risk of measuring job processes that are easy to measure rather than those that have the greatest potential value, for example, routine work vs.	Focus on key objectives and a cascading down to more operational measures can improve the insight into the valuable processes of the organization.

research projects.	
Not targeting the performance indicators on the relevant stakeholder groups will often lead to the information not being used.	Stakeholder analyses and clear information and communications strategies can improve the targeting of performance indicators to stakeholders by understanding their needs. Clarity of purpose is achieved.
Not comparing like with like can lead to feelings of unfairness and lack of trust in the performance measures.	Data quality must be high and consensus established on the principles on which comparison is based. Trust can be enhanced by using performance indicators intelligently, to prompt questions rather than to jump to conclusions.
Not understanding user needs may lead to the wrong performance indicators being collected and efforts put in the wrong areas.	Stakeholder analysis can again provide a useful tool.
Not revising the system in response to internal and external changes may lead to an outdated system not measuring the significant things and possibly sending the organization in the wrong direction.	Regular refinement of individual indicators and the set of indicators should be included in the evaluation and review system of the organization.

Stakeholder in Performance Measurement

Stakeholders are the critical factors in making performance management work. Performance management can help to keep focus on the service users and citizens who should be at the heart of performance measurement systems. Beyond surveying users, performance measurement systems should use customer intelligence; information about how, when and who is using services. This information can help to shape the delivery and effectiveness of services, help management to reach its diversity and equality goals (I&DeA, 2006a, p. 25).

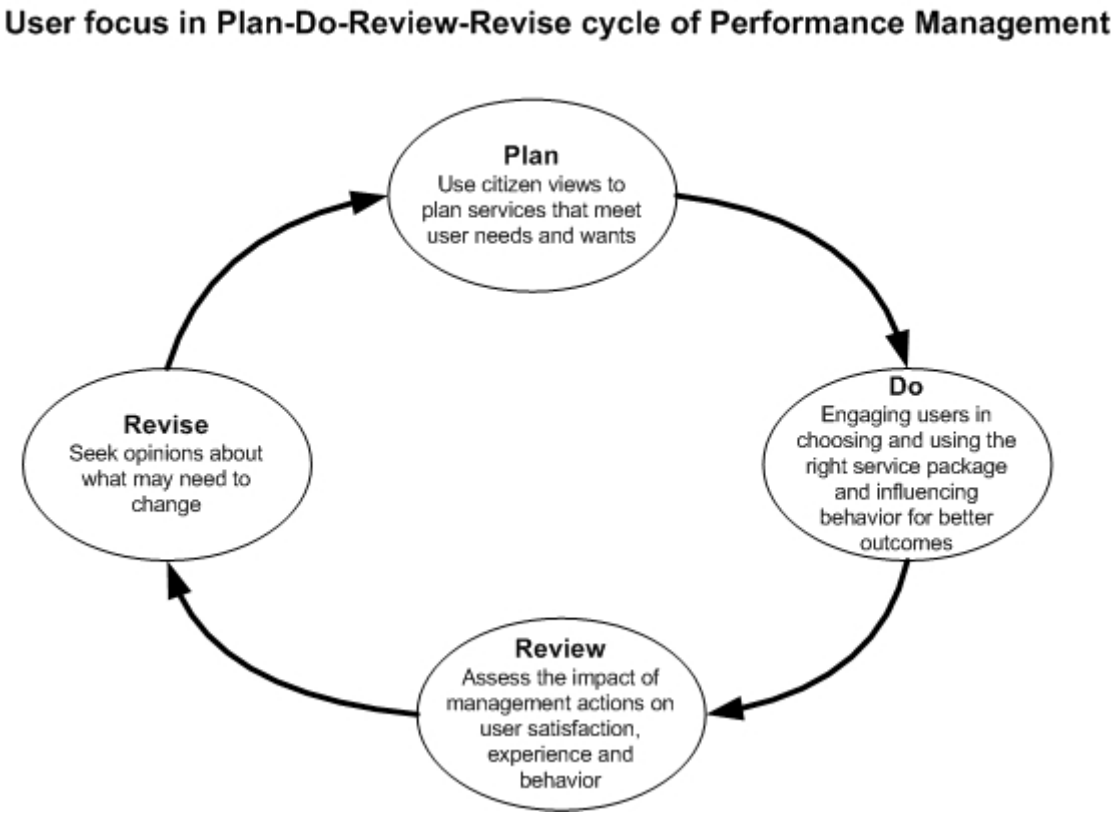

Figure 26. User focus in the Plan-Do-Review-Revise cycle of performance management (I&DeA, 2006a, p. 26)

Different Users and Use of Performance Indicators

A performance measurement system can have a wide range of users and each may use the information in different ways. These different requirements need to be recognized when devising performance indicators (Audit Commission, 2000b).

Users of performance information include:

- service users: direct (visitors at the library, passport applicants or patients) and indirect (relatives and parents)
- the general public, including interest groups and the media
- central government

- politicians (local and central), local councilors and nonexecutive directors of trusts and health authorities
- auditors and inspectors
- managers at all levels in the organization
- staff

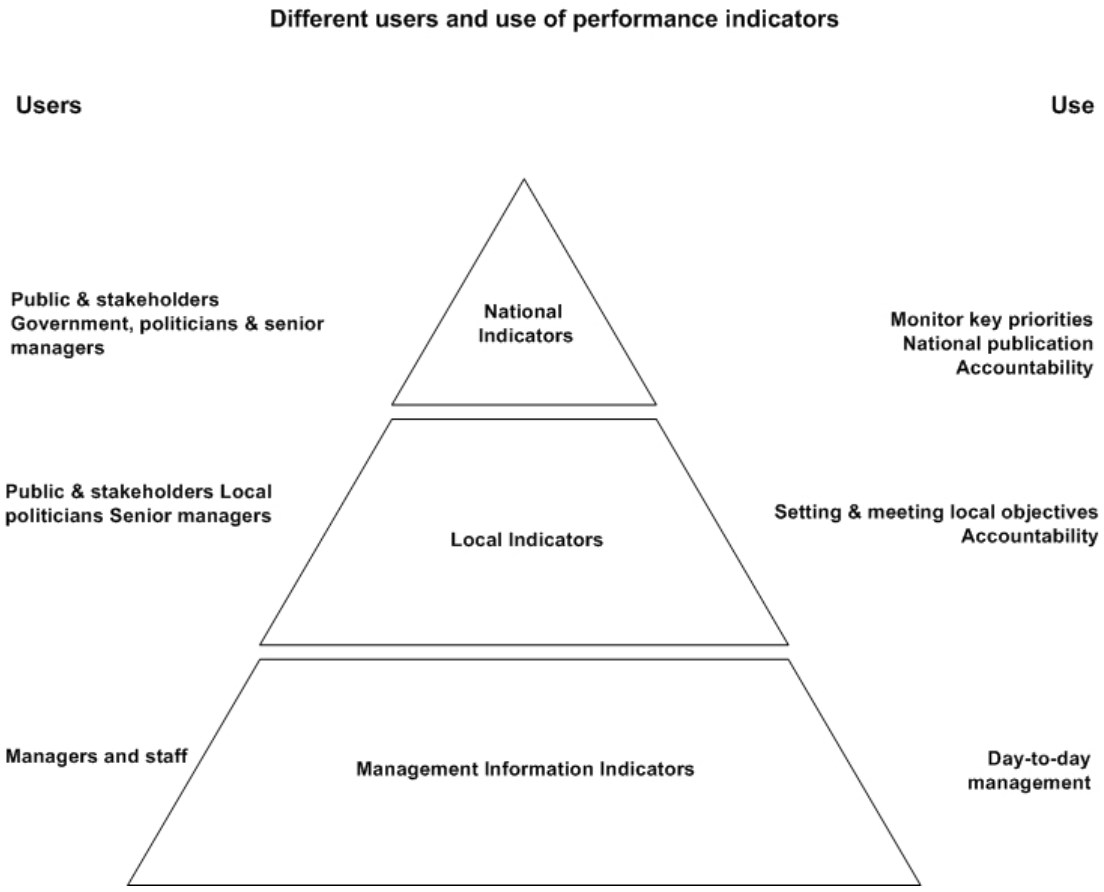

Figure 27. Different users and use of performance indicators (Audit Commission, 2000a)

Targets in Performance Measurement

Targets specify time-bound levels for improvement and are usually based around a particular performance indicator (I&DeA, 2006a, p. 13). Targets express a specific level of performance the organization is aiming to achieve where as Standards express the minimum acceptable level of performance, or the level of performance that is generally expected.

Well-designed targets are often described as SMART:

- Specific
- Measurable
- Achievable
- Realistic
- Time-bound

Table 32. Checklist for Defining Targets (I&DeA, 2006a, p. 15)

the outcome you are trying to achieve	• What is the ultimate objective? • Are there broader aims you should take into account, for example, community strategy? • What are the timescales?
defining where you are now and where you want to be	• What is current performance? What are the performance trends? • Are there any national targets or minimum standards? • How do you compare with others?
identifying appropriate measures	• is there a clear measure and existing data against which to set and assess the target?
consulting with staff, members and citizens	• Involve those who will deliver and be held accountable for the target. • Who are the other stakeholders? • How can you involve them or use known information about them in setting the target?
creating an action plan	• How will you achieve the target? • What are the milestones on the way to achievement? • Who is responsible for performance?

monitoring progress	• How will progress be monitored? • What actions will be taken in response to monitoring? • How will those responsible for the target be held accountable?

Review of Performance Measurement Models and Tools

There are many approaches and tools available in the market for the performance measurement and the choice which to use can be a difficult one (I&DeA, 2006b) . However all aim to address one or more of the following objectives, with the ultimate aim of improving performance:

- help understand what customers need
- help organizations and employees become more results orientated
- improve the quality of service to customers by improving processes or practices
- provide a structured approach to strategic management
- create links between individual, service and corporate objectives
- translate strategy in to performance measures and targets and in doing so rationalize performance information
- help demonstrate individual staff contribution to organizational objectives and create ownership of performance by staff involvement in the improvement process
- identify strengths and areas for improvement
- aid internal and external communication

Logic Model

The Logic Model is a framework for planning, managing, measuring and evaluating government programs. Using a goal-measure approach, it illustrates the cause-effect linkages between program activities and outcome results. Logic model is a systematic and visual way to present and share your understanding of the relationships among the resources you have to operate your program, the activities you plan, and the changes or results you hope to achieve.

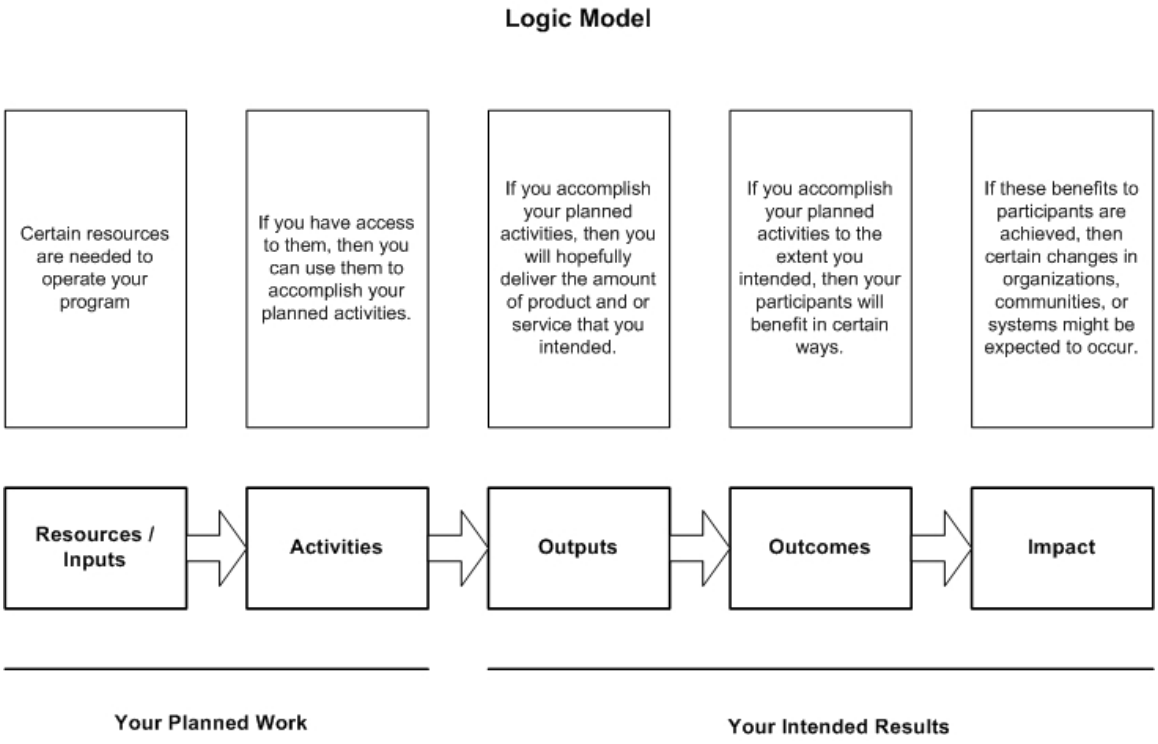

Figure 28. Logic model (Kellogg Foundation, 2004)

Logic Model uses words and/or pictures to describe the sequence of activities and how these activities are linked to the results the program expected to achieve. Planned Work describes what resources you need to implement your program and what you

intend to do. Intended Results include all of the program's desired results (outputs, outcomes, and impact) (Kellogg Foundation, 2004).

The purpose of a Logic Model is to provide stakeholders with a road map describing the sequence of related events connecting the need for the planned program with the program's desired results. Mapping a proposed program helps you to visualize and understand how human and financial investments can contribute to achieving your intended program goals and can lead to program improvements (Kellogg Foundation, 2004).

Balanced Scorecard

The Balanced Scorecard is a performance measurement and performance management system developed by Robert Kaplan and David Norton and has been adopted by a wide range of leading edge organizations, both public and private. The balanced scorecard is a management system (not only a measurement system) that enables organizations to clarify their vision and strategy and translate them into action. It provides feedback around both the internal business processes and external outcomes in order to continuously improve strategic performance and results.

The Balanced Scorecard is a conceptual framework for translating an organization's vision into a set of performance indicators distributed among four perspectives: Financial, Customer, Internal Business Processes, and Learning and Growth. Indicators are maintained to measure an organization's progress toward achieving its vision.

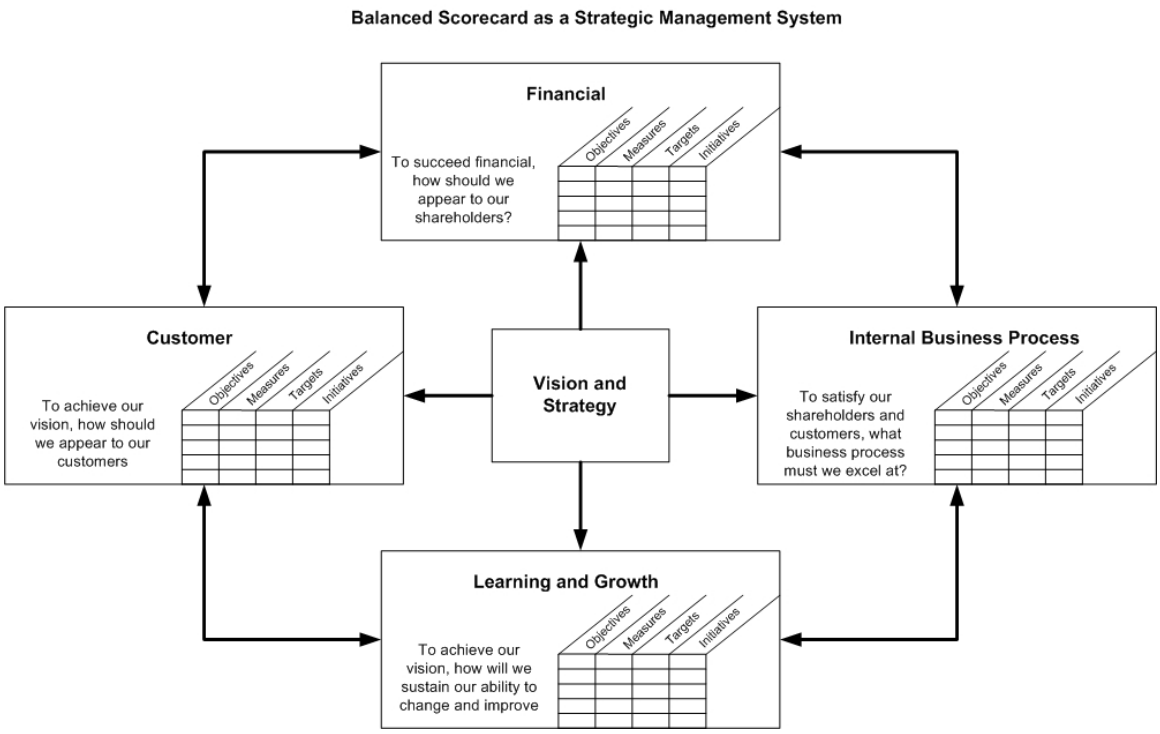

Figure 29. Balanced scorecard as a strategic management system (Kaplan & Norton, 1996)

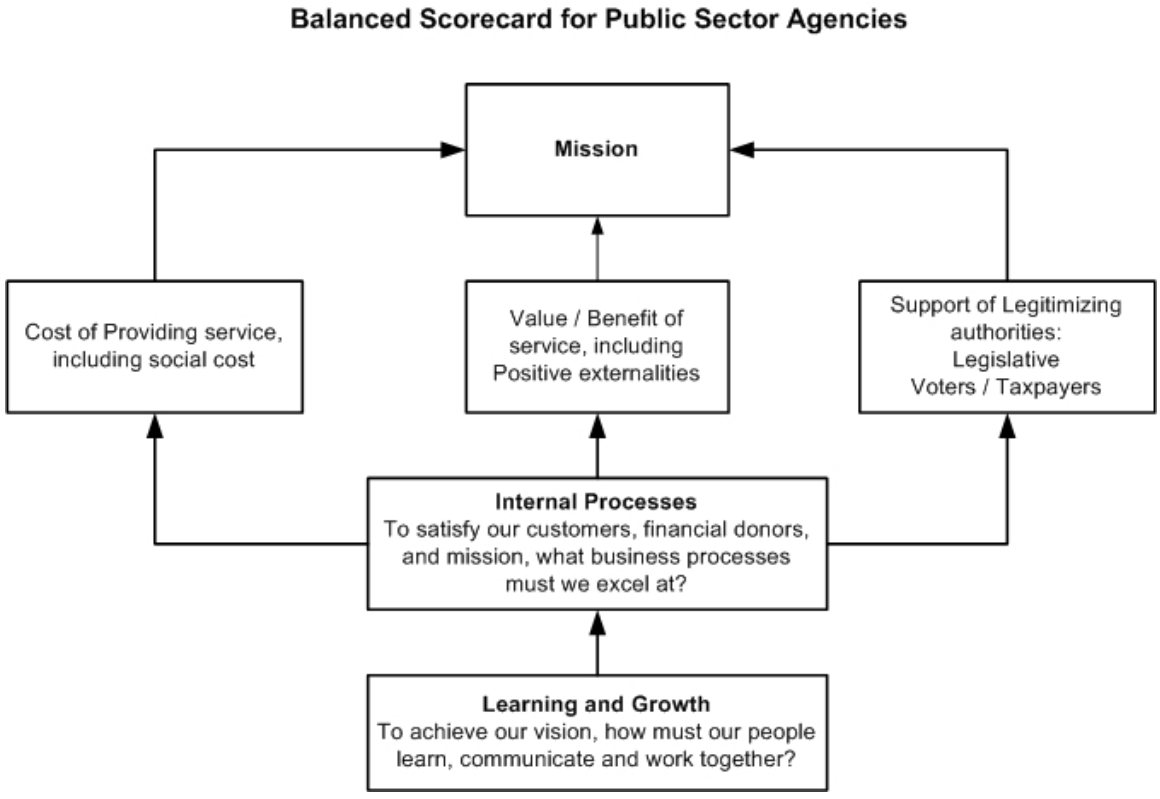

Figure 30. Balanced scorecard for public sector agencies (Kaplan & Norton, 2001)

Financial perspective captures cost efficiency, delivering maximum value to the customer for each dollar spent. Customer perspective captures the ability of the organization to provide quality goods and services, effective delivery, and overall customer satisfaction. Internal Business Processes perspective provides data regarding the internal business results against measures that lead to financial success and satisfied customers. Learning and Growth perspective captures the ability of employees, information systems, and organizational alignment to manage the business and adapt to change.

Baldrige National Quality Program

The Malcolm Baldrige National Quality Award is given by the United States National Institute of Standards and Technology. The program aims to reward quality in the business, health care, education, and nonprofit sectors and was inspired by the ideas of Total Quality Management or TQM.

Baldrige Criteria for Performance Excellence Framework is based on following seven Categories such as Leadership, Strategic Planning, Customer and Market Focus, Measurement, Analysis, and Knowledge Management, Workforce Focus, Process Management, Results (Baldrige National Quality Program, 2007b).

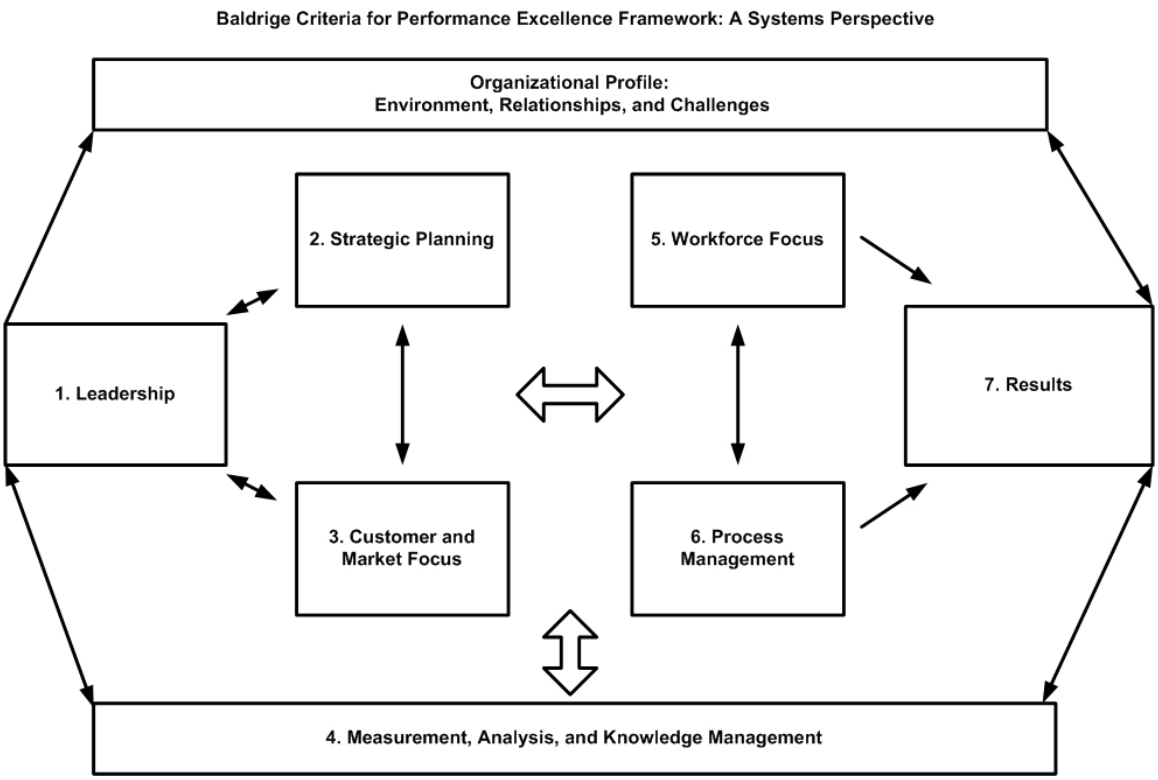

Figure 31. Baldrige criteria for performance excellence framework: A systems perspective (Baldrige National Quality Program, 2007b)

Leadership, Strategic Planning, and Customer and Market Focus represent the leadership triad. Workforce Focus, Process Management, and Results represent the results triad. Organization's workforce and key processes accomplish the work of the organization that yields your overall performance results. All actions point toward Results a composite of product and service, customer and market, financial, and internal operational performance results, including workforce, leadership, governance, and social responsibility results (Baldrige National Quality Program, 2007b).

The horizontal arrow in the center of the framework links the leadership triad to the results triad, a linkage critical to organizational success. The two-headed arrows between the Leadership and Results indicate the importance of feedback in an effective

performance management system. Measurement, analysis, and knowledge management serve as a foundation for the performance management system (Baldrige National Quality Program, 2007b).

EFQM Excellence Model

European Foundation for Quality Management (EFQM) introduced the EFQM Excellence Model in 1991 to help guide organizations to improve its performance. The EFQM Excellence Model, a non-prescriptive framework based on nine criteria, can be used to assess an organization's progress towards excellence (EFQM, 2003).

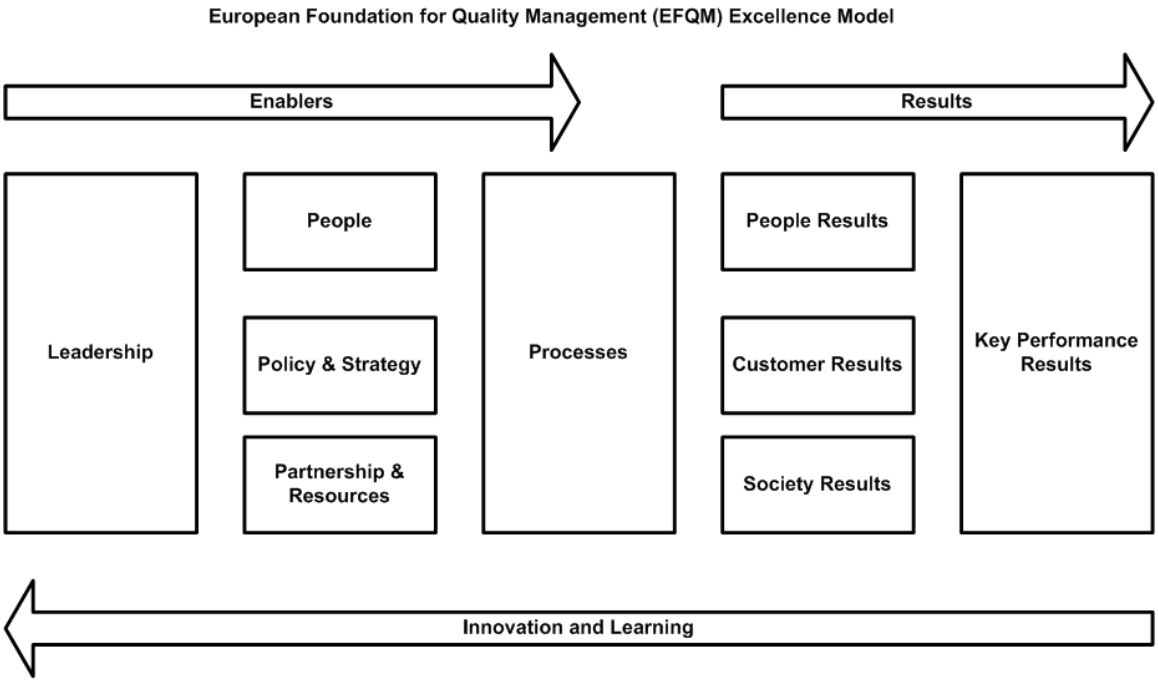

Figure 32. The EFQM excellence model (EFQM, 2003)

Excellent results with respect to Performance, Customers, People and Society are achieved through Leadership driving Policy and Strategy that is delivered through People, Partnerships and Resources and Processes. Innovation and learning help to improve enablers which in turn lead to improved results. Enabler criteria are concerned

with how the organization undertakes key activities and Results criteria are concerned with what results are being achieved (EFQM, 2003).

Performance Prism

Performance Prism framework explains that an organization's results (stakeholder satisfaction) are a function of determinants (the other prism facets). The framework enables a balanced picture of the business highlighting external (stakeholder) and internal (strategy, process and capability) measures and also enabling financial and non- financial measures and measures of efficiency and effectiveness throughout the organization (Neely, 2002).

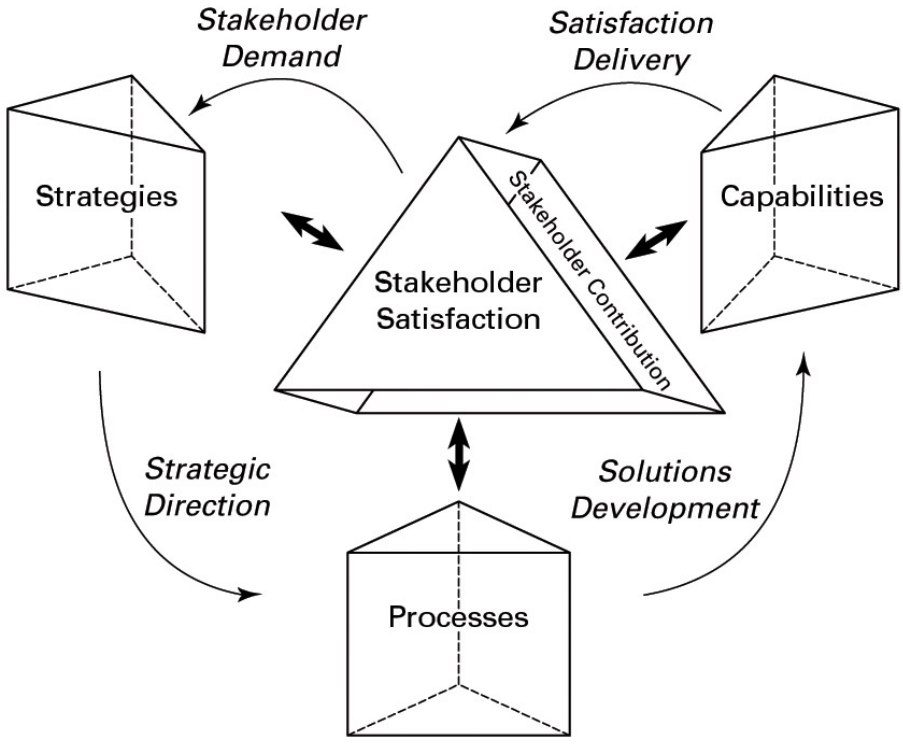

Figure 33. Performance prism: Delivering stakeholder value (Neely, 2002)

Neely (2002) identifies five distinct but linked perspectives of performance measures in the Performance Prism framework such as:

- Stakeholder satisfaction - which are our key stakeholders and what do they want and need?
- Strategies - what strategies do we have to put in place to satisfy the wants and needs of these key stakeholders?
- Processes - what critical processes do we need to operate and enhance these processes?
- Capabilities - what capabilities do we need to operate and enhance these processes?
- Stakeholder contribution - what contributions do we require from our stakeholders if we are to maintain and develop these capabilities?

Comparison of Performance Measurement Models and Tools

Table 33. Comparison of Performance Measurement Models and Tools

Performance improvement model or tool	Description	Strengths
Logic Model	Provides stakeholders with a road map describing the sequence of related events connecting the need for the planned program with the program's desired results.	Shows the logical relationships between the resources that are invested, the activities that take place and the benefits or changes that result.
Balanced Scorecard	A multi-dimensional framework for managing strategy by linking objectives, initiatives, targets and performance measures across key corporate perspectives.	Links targets and measures to operational objectives and in doing so helps rationalize performance information, identify gaps and ensure balance.

Baldrige National Quality Program	Criteria designed to help organizations use and integrated approach to organizational performance management.	The program aims to reward quality in the business and nonprofit sectors and was inspired by the ideas of Total Quality Management.
EFQM Excellence Model	Organizational improvement framework for assessing strengths and areas for improvement across the spectrum of an organization's activities	Encourages innovation and learning and promotes ownership and commitment to change through self assessment.
Performance Prism	A stakeholder centric, three dimensional framework for performance measurement and management	Approach designed to consider all key stakeholders associated with an organization.

Summary

The main objective of performance measurement in public organizations is to support better decision-making by management, leading to improved outcome for the community, and to meet external accountability requirements. The term performance refers to output results and their outcomes obtained from processes, products, and services that permit evaluation and comparison relative to goals, standards, past results, and other organizations.

The performance measurement should reflect two evaluation dimensions such as process and results. The term process refers to linked activities with the purpose of producing a product or service for a customer (user) within or outside the organization. The term result refers to outputs and outcomes achieved by an organization in addressing the requirements of a strategic objectives and goals identified.

From review of performance management / measurement strategy process in private / public sector performance models it is clear that the existing e-Government performance measurements is only providing partial evaluations and cannot give policy

makers evaluation elements for their decisions. Most of the e-Government studies are assessed from only one perspective either citizens, businesses or public officials. Issues analyzed by different evaluations leads to different outcomes and give only part of the answer what is the level of e-Government in a given country or local community.

Study will make use of the best practices in the existing private / public sector performance measurement models and apply it in the context of e-Government for the proposed e-Government performance measurement framework. Many of the performance studies are used as the main determinants of public opinion on e-Government and for developing e-Government strategy, it is very important that, what is being measured is crucial for the further development of e-Government.

Chapter 4

Methodology

Research Method

For the purpose of this study e-Government is defined as "the use of information and communication technologies (ICTs), particularly the Internet, as a tool to achieve better government". It enables better policy outcomes, higher quality services and greater engagement with citizens (OECD, 2003a). The e-Government can be classified as three major categories of customers that interact with government agencies namely Government to Citizen (G2C), Government to Business (G2B) and Government to Government (G2G).

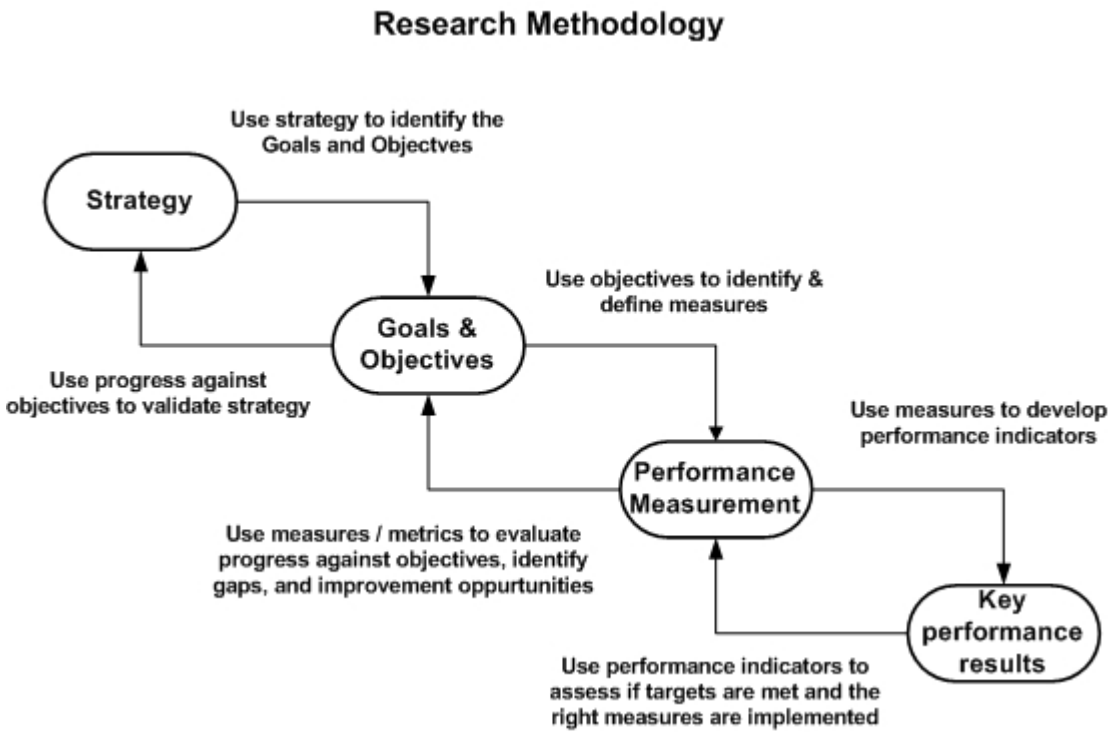

Figure 34. Research methodology

The dissertation is organized into three essays and specific goals of the research in these three essays are:

a) Examine various e-Government performance measurement models, in the context they were proposed and being used. The study used academic research, government published literature from developed and developing countries and non-profit organizational research to identify existing e-Government benchmarking and performance evaluation studies. First essay discussed existing e-Government performance measurement models and analyzed of their weakness.

b) Examine different performance measurement tools used in private and public sector and how well it tied to e-Government performance measurement. The study compared the constructs and relationships in the limited available research on e-Government models and the vast IS research oriented towards non-government organizations. The second essay discussed private and public sector performance models and their potential application to e-Government.

c) Developed an e-Government framework for performance measurement. Both essays 1 and 2 were used as basic building blocks to develop the proposed e-Government performance measurement framework. The third essay was developed into an e-Government framework for performance measurement based on the study of existing e-Government measurement research and performance measurement literature and research in the private sector.

In order to validate the proposed e-Government framework, following steps were followed.

1. Selected 3 case studies on e-Government projects and described how they went about strategizing the project.
2. Using the strategic information available from the case study, developed performance measurements for the proposed framework.
3. Validated the proposed framework using the selected case studies.

e-Government Performance Model – Theoretical Perspective

As per Russell (1999), organization needs to work outside in to drive improvement with a clear sense of requirements of its key stakeholders. To achieve outside in concepts, Russel (1999) proposed following conceptual model.

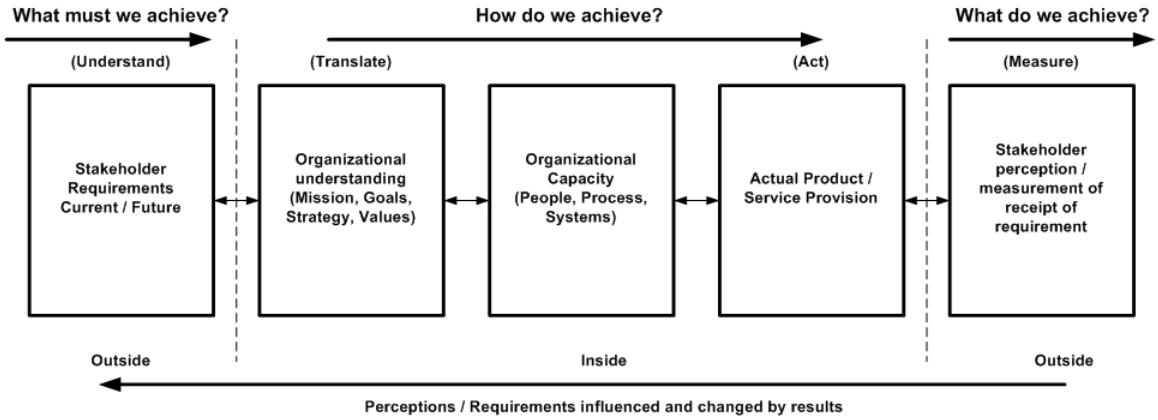

Figure 35. Outside in conceptual model (Russell, 1999)

The following theoretical perspective was used to develop the performance measurement model. Strong leadership with clear vision and mission about the organization can lead to improved productivity, efficient processing, and empowering workforce. This can produce increased political, financial & customer value, increased adoption & participation, usage and customer satisfaction. As e-Government initiatives

produce better measurable results lead to increase confidence in e-Government which in turn lead to more investment in future e-Government investments.

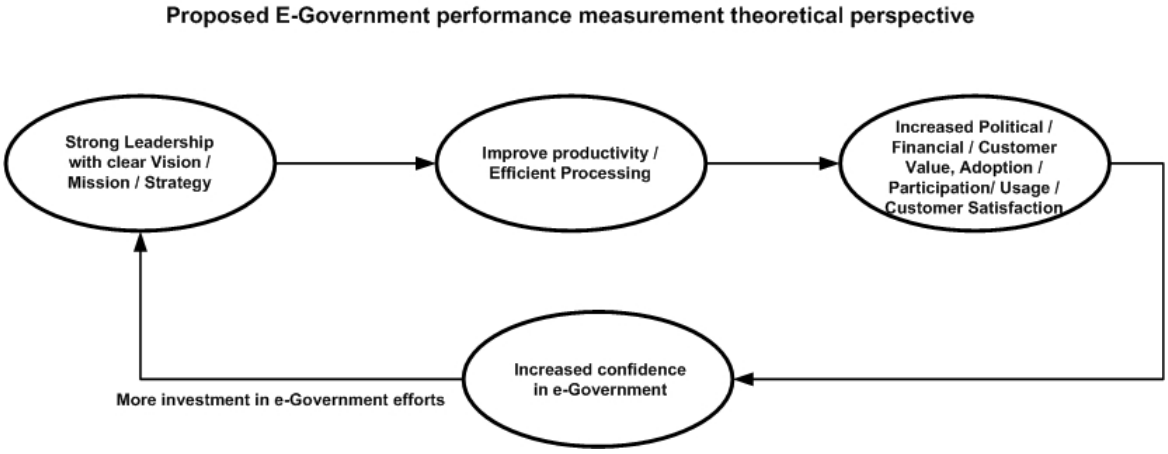

Figure 36. Proposed e-Government performance measurement theoretical perspective

The following performance related definitions are used for this proposed performance measurement framework (OECD, 2002).

Table 34. Performance Definitions for the Proposed Performance Measurement Framework

Term	Definition
Performance	The degree to which a development intervention or a development partner operates according to specific criteria/standards/ guidelines or achieves results in accordance with stated goals or plans.
Performance measurement	A system for assessing performance of development interventions against stated goals.
Performance monitoring	A continuous process of collecting and analyzing data to compare how well a project, program, or policy is being implemented against expected results.
Performance indicator	A variable that allows the verification of changes in the development intervention or shows results relative to what was planned.

The measurement framework used Customers and stakeholder terms interchangeably. The following table identifies the definition and roles of stakeholders /

Customer of e-Government, which was used for this proposed performance measurement framework (New Zealand State Services, 2003).

Table 35: Stakeholders Definition for the Proposed Performance Measurement Framework

Stakeholders	Roles
All users of government services including • Citizens • Businesses • Communities • Visitors • Overseas residents and businesses	• Consumers of government information and services, whether as customers or subjects of the State. • Participants in policy and decision-making and other democratic exercises. • Taxpayers.
Government including • Departments • Policy Makers • Other government agencies and bodies • Local government	• Providers and users of government information and services. • Advisors on developing and implementing policies. • ICT professionals.
Intermediaries • Non-governmental organizations • Commercial providers	• Go-betweens for government information and services • Partners in delivering outcomes.
ICT providers	• Providers, designers and builders of technology tools and applications for e-government.

e-Government Performance Model – Systems Perspective

The proposed e-Government performance measurement model was developed from the theoretical concepts (see section e-Government Performance Model – Theoretical Perspective) and from Baldrige Quality award system model (Baldrige National Quality Program, 2007b). The Baldrige program is designed to assist organizations to improve its performance practices, capabilities and results. Baldrige system model offers a powerful set of guidelines for operating effective organization and proactively adopt guidelines to improve performance.

Baldrige system model was modified to satisfy the requirements of e-Government measurements based on the study of existing e-Government measurement research, and performance measurement literature research in public and private sector.

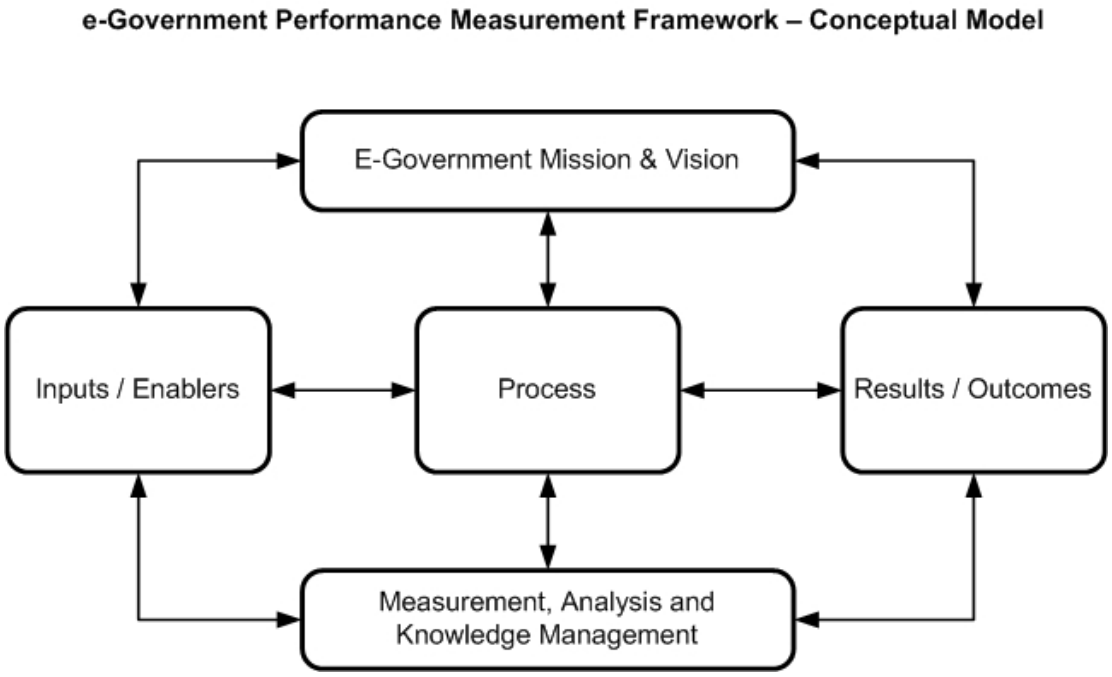

Figure 37. e-Government performance measurement framework – conceptual model

Systems perspective helps to manage whole organization, as well as its components, to achieve success. Key Components of the proposed model are

- e-Government Mission and Vision
- Enablers: Leadership, Strategy Focus, Customer and Market Focus, Partnership & Resource Focus, ICT Focus and Public Trust Focus.
- Process: Front Office Management, Back Office Management, Process Management, Workforce Management.

- Results: Political & Leadership Outcomes, Society Outcomes, Customer Focused Outcomes, Trust Outcomes, ICT Outcomes, Process Effectiveness Outcomes, Product and Service Outcomes, Financial and Market Outcomes, Workforce Outcomes.
- Measurement, Analysis and Knowledge Management.

Organization Mission and Vision set directions necessary to achieve future success for the organization. Enablers set the direction where organization wants to go, who leads, how to get there etc. It sets the agenda within which organization make things happen. Enablers using Leadership guides the organization to achieve its Mission and Vision using many focuses areas. Enablers set direction, monitor progress and take corrective actions. (Enablers ↔ e-Government Mission & Vision)

Processes are means by which organization chosen directions into actions. Processes help to identify, manage, review and improve the way the organization do things. Enablers using Leadership along with focus areas leads to improved processes which in turn improve organization's products, services, programs, processes, and operations. (Enablers ↔ Process)

Results reflect organizations actual performance and serve as baseline for leaders to monitor progress against organizational goals and make corrective actions to improve the performance. Continuously improved process will create high performing results, value for all its key stakeholders (citizens, business, workforce, partners, the public, and the community), builds loyalty, contributes to growing the economy, and contributes to society. (Process ↔ Results)

Measurement and Knowledge Management category is used as brain center for the measurement framework. It is essential for organization to collect data and information from all available sources to analyze and organize as a means to discover problems and making sustainable improvements. Results data is collected and analyzed using Knowledge Management measurement system. (Results ↔ Knowledge Management)

Organization processes interact with accumulated knowledge of organization (Knowledge Management data) and its people helps to continuously improve its operations. (Process ↔ Knowledge Management)

Enablers use knowledge management data to build and modify the Mission, Vision and Strategies to guide the organization to higher values to all its stakeholders. (Enablers ↔ Knowledge Management)

Enablers, Processes, Results and Knowledge Management are communicated to produce organizational mission and vision. If any part of integrated system is missing, performance of the organization suffers. It means linking enablers with continuously improved processes lead to produce high performance results which in turn provide overall organizational performance and satisfy customers and stakeholders.

Specific Procedures Employed

Research was conducted with an illustrative case study approach using documentary analysis and not any direct observations. To supplement the findings information was gathered from federal, state, local organizations, private and non-profit organization. The information included both generic and e-Government performance management information, ranging from guides to specific best practices.

The research began by identifying the e-Government strategic plans on the information technology / e-Government office web sites. The web sites of USA, UK, Australia and New Zealand were used as example of developed countries and India as an example of developing country. The research also examined many federal agencies and state web sites in US as additional reference of e-Government strategy plans. Then the research studied for evidences of performance measures that were part of the implementation and monitoring process of the strategic planning.

The research also investigated the performance measurement models in the public sector and private sector to gain better understanding of the best practices and how some of the principles could be applied in the e-Government domain.

After a careful review of all the strategic plans and best practice performance information, research proposed a measurement framework to support e-Government. The proposed framework was taking into account the measurement of the following basic elements of the e-Government such as leadership, people, policy and strategy, partnership and resources, process improvements and results pertaining to customers, society and political benefits.

Table 36. Categories of Proposed Performance Measurement Frameworks

Inputs / Enablers	Process	Results / Outcomes
• Leadership Focus • Policy & Strategy Focus • Customer and Market Focus • Partnership & Resource Focus • ICT Focus • Public Trust Focus	• Front Office / Multi Channel Management • Back office Management • Workforce Management • Process Management • Measurement, Analysis and Knowledge Management	• Political / Leadership Outcomes • Society Outcomes • Customer Focused Outcomes • Trust Outcomes • ICT Outcomes • Process Effectiveness Outcomes • Product and Services Outcomes • Financial and Market Outcomes • Workforce Outcomes

Each Category was subdivided into multiple parameters. Each Category was also provided with indicators and measures. The measurement parameters, indicators and how to measure were taken from multiple sources as part of the research and document analysis of national and state e-Government strategy plans and performance measurement reports.

In order to validate the proposed e-Government performance measurement framework, a number of national e-Government Strategies were evaluated. A brief summary of each nation's e-Government strategy was described to assist the validation of the model. Proposed model was validated with an illustrative case study approach using documentary analysis and not any direct observations. The research validated the study by finding evidence of performance measures that were part of the implementation and monitoring process of the strategic planning.

Following National e-Government Strategies were used for the validation of the performance measurement framework

- US e-Government Strategy (2003)
- UK e-Government Strategy (2005)
- Australian e-Government Strategy (2006)
- New Zealand e-Government Strategy (2006)
- India Nation e-Government Plan (2006)

For validation purpose each category item of the proposed performance measurement framework was compared against each of the National e-Government strategies for existence of the category item reference. Where ever there was evidence, it was marked in the validation matrix chart.

The validation did not identify each item within the measurement framework categories for evidences in national strategy documents. In the enabler section, Leadership focus and Partnership focus were not clearly identified by all the evaluated strategies. In the results section, Society outcomes and Trust outcomes were also not clearly identified by some of the evaluated strategies.

Summary

It is important to realize that many of the existing e-Government measurement and benchmarking studies are probably based on different definitions of what is being measured. The different motives and targets of the e-Government measurement and benchmarking studies result in different approaches to performance measurement. These studies differ in focus, in scope and in the type of measurement criteria used (input, output, usage, impact and environmental indicators). This measurement framework is drawn from our analysis of a relatively small number of case studies.

e-Government performance framework proposed in this research is not designed to replace the existing e-Government benchmark surveys that are very common to compare country, state, municipalities etc which primarily compares the services, delivery etc. This framework concentrate on how strategies are effectively delivered and how Government and Customers (Citizens, Business, Governmental agencies) benefited by the strategy.

Building on previous studies, and recognizing the need to understand socio-economic and cultural factors, the proposed framework should provide results that can be adapted for different federal, state and local e-Government initiatives. The proposed framework, presented can serve as a starting point for any organization, tailored to the strategic directions and performance requirements unique to each organization. The e-Government performance measurement framework is the source of steady, timely, reliable, and useful information on e-Government initiatives for the policy makers to act upon for their strategic and financial decisions or to address corrective actions when early warnings signal of emerging problems.

Chapter 5

Results

This results chapter proposes a performance measurement framework to support e-Government based on the study of existing e-Government measurement research and performance measurement literature research in public and private sector.

The goal of this performance measurement framework was to provide a holistic approach to e-Government evaluation and assessment that integrated into organizations broader management processes. The proposed measurement frameworks were not considered an end unto themselves, but rather support the organization's mission and vision in providing e-Government services. This proposed e-Government performance measurement framework would describe a possible approach for the government organizations to develop a basic performance measurement framework to support their organizations specific mission, vision and strategies.

The framework was not designed to rank e-Government initiatives from the most to the least valuable but it will allow Government organizations to identify the customer need s and reprioritize the e-Government initiatives. e-Government services are provided through multiple channels such as Office, Telephone, Fax, Call Centers, Mobile Devices, Internet, Digital TV, Radio and through Intermediaries. The performance model proposed could support the e-Government initiatives and provide measurement of for the e-Service channels. This framework concentrated on how strategies were effectively delivered and how Government and stakeholders (Citizens, Business, Employees and Governmental agencies etc.) are benefited by the strategy.

The performance measurement framework was built upon a set of core values and concepts. These values and concepts provide the foundation for integrating key performance requirements within the framework. Through effective management in all core areas, organizations could improve the services deliver on a continuous basis. The e-Government performance measurement framework proposed was based on the following core values adopted from the Baldrige National Quality Program (Baldrige National Quality Program, 2007b)

The performance framework was built on the following set of interrelated Core Values and Concepts:

Table 37. Framework Core Values and Concepts (Baldrige National Quality Program, 2007)

Core Values	Concepts
Visionary Leadership	Organization's leadership set directions and create a customer focus, clear and visible values, and high expectations that satisfy the needs of all your stakeholders. Leadership also ensures the creation of strategies, systems, and methods for achieving performance excellence, stimulating innovation, building knowledge and capabilities, and ensuring organizational sustainability.
Customer-Driven Excellence	Customer-driven excellence is directed toward customer retention and loyalty, market share gain, and growth. It demands constant sensitivity to changing and emerging customer and market requirements and to the factors that drive customer satisfaction and loyalty. It demands listening to your customers.
Organizational and Personal Learning	Achieving the highest levels of organizational performance requires a well-executed approach to organizational and personal learning. Organizational learning includes both continuous improvement of existing approaches and significant change, leading to new goals and approaches. Learning is directed towards better products and services, more responsive, adaptive, innovative, and efficient, giving organization marketplace sustainability and performance advantages and giving your workforce satisfaction and the motivation to excel.
Valuing Employees and Partners	An organization's success depends increasingly on the diverse backgrounds, knowledge, skills, creativity, and motivation of its workforce and partners. Valuing the people in your workforce means committing to their satisfaction, development, and well-being. Organizations need to build internal and external partnerships to better accomplish overall goals.

Agility (capacity for rapid change and flexibility)	Organizations face shorter cycles for the introduction of new/improved products and services, and nonprofit and government organizations are increasingly being asked to respond rapidly to new or emerging social issues. Major improvements in response times often require new work systems, simplification of work units and processes, or the ability for rapid changeover from one process to another.
Focus on The Future	A focus on the future includes developing your workforce and suppliers, accomplishing effective succession planning, creating opportunities for innovation, and anticipating public responsibilities and concerns.
Managing for Innovation	Innovation is making meaningful change to improve an organization's products, services, programs, processes, and operations and to create new value for the organization's stakeholders. Innovation will lead organizations to new dimensions of performance. The ability to rapidly disseminate and capitalize on this knowledge is critical to driving organizational innovation.
Management by Fact (Measurement and analysis of performance)	Organizations depend on the measurement and analysis of performance. Performance measurement should include customer, product, and service performance; comparisons of operational, market, and competitive performance; supplier, workforce, cost, and financial performance; and governance and compliance. Analysis refers to extracting larger meaning from data and information to support evaluation, decision making, and improvement.
Social Responsibility	Organization's leaders should stress responsibilities to the public, ethical behavior, and the need to practice good citizenship. Organizations should stress ethical behavior in all stakeholder transactions and interactions.
Focus on Results and Creating Value	Results should be used to create and balance value for key stakeholders like customers, workforce, stockholders, suppliers, partners, the public, and the community. By creating value for key stakeholders, organization builds loyalty, contributes to growing the economy, and contributes to society.
Systems Perspective	A systems perspective includes senior leaders' focus on strategic directions, on customers, monitor, respond to, and manage performance based on results. A systems perspective uses measures, indicators, and organizational knowledge to build key strategies. System perspective links strategies with key processes and aligning resources to improve overall performance and satisfy customers and stakeholders. It helps managing whole organization, as well as its components, to achieve success.

Proposed e-Government Performance Measurement Model

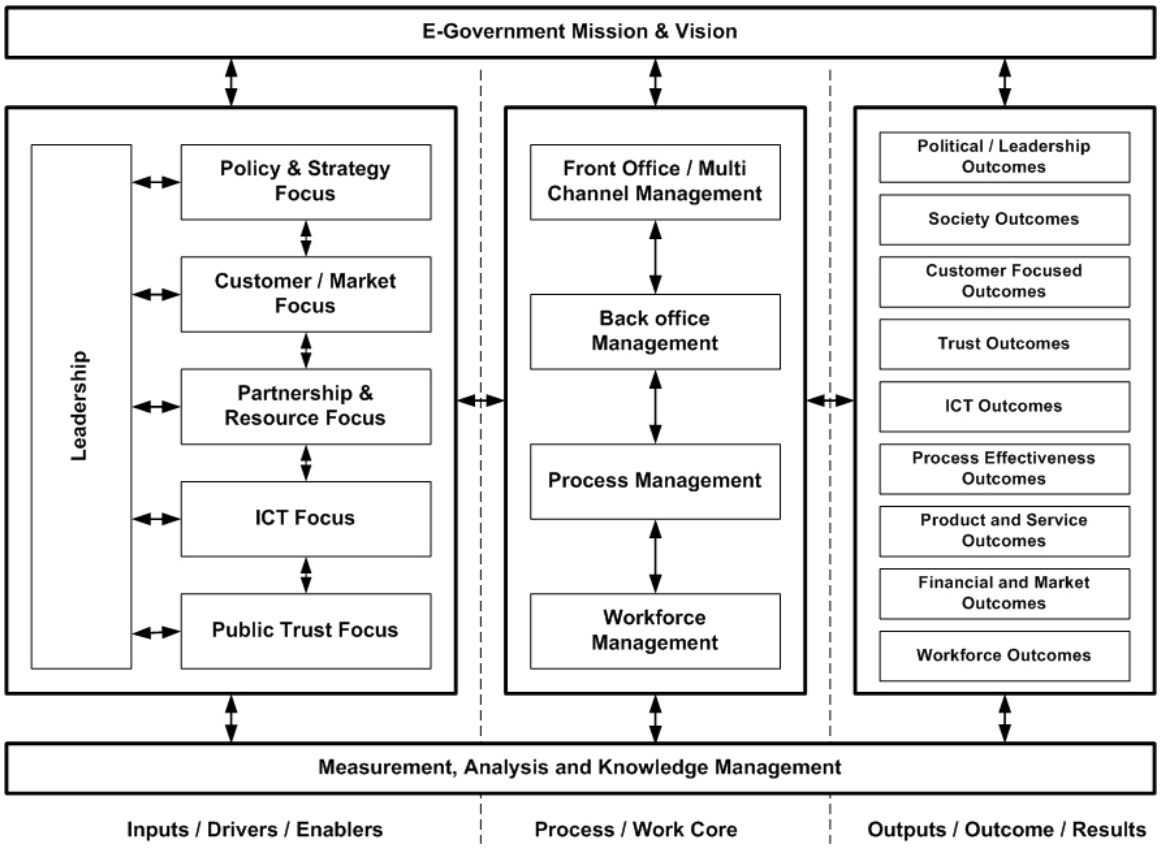

Figure 38. Proposed e-Government performance measurement framework model

Inputs / Enablers Summary

Categories	**Parameters**
Leadership Focus	• Leaders develop the mission, vision, values and ethics with clarity of purpose and direction within the organization. • Align business operations with Vision and Mission. • Integrate continuous improvement into normal business operations • Leaders interact with customers, partners and representatives of society • Leaders motivate, support and recognize people in the organization to improve services.
Policy & Strategy Focus	• The organization has a clear strategy for the development of e-Government strategy and delivering outcomes from it. • Identify and prioritize opportunities for improvement with input from key stakeholders • Strategies with tangible targets to be accomplished are formulated. • Strategy Development • Strategy Deployment
Customer and Market Focus	• Customer, Market and Product Knowledge. • Management of Customer Relationships and Satisfaction. • Ensure products and services meet customer needs. • Methods are deployed to learn what the customer wants. • Improve the organization's responsiveness to change in customer needs.
Partnership & Resource Focus	• Develops partnerships in order to meet Organizational Strategic objectives • Continuous review and monitoring of partnership. • Seeks resources from outside the organization to meet its strategic objectives. • Supplier/Partner Management
ICT Focus	• Development of ICT Infrastructure • Affordable access to Customers • Development ICT Skills • Architecture and Standards
Public Trust Focus	• Availability of organizational information to Customers (transparency) • Organizational providing policies, procedures and plans to implement Security and Privacy

Process Summary

Categories	**Parameters**
Front Office / Multi Channel Management	• Provision of Government services on Multiple Channels • Marketing and Communicating Government service delivery on Multiple Channels • Integration of Channel Services
Back office Management	• Information and Data Management • Reliability and Availability of systems • Financial Management of Technology expenses • Back Office Efficiency • Back Office Effectiveness
Workforce Management	• Workforce development in line with the organization's aims and objectives. • Workforce Environment • Workforce Engagement • Workforce knowledge and competencies are identified, developed and sustained • Workforce are rewarded, recognized and cared for
Process Management	• Products and Services are designed and developed based on stakeholders' needs and expectations. • Processes are continuously improved to generate increasing value and to produce better results in accordance with strategies. • Develop a process improvement culture using quality management principles • Processes are continuously improved utilizing stakeholders feedback and opinion. • Work processes are clearly defined and documented, allowing the entire workforce to understand them.
Measurement, Analysis and Knowledge Management	• Establish data and information systems to support achievement of mission and goals • Creation, collection and management of organizational knowledge • Inform decision making through accurate, reliable and timely data. • Knowledge Management for Organizational Performance • Management of Information Technology.

Results / Outcomes Summary

Categories	**Parameters**
Political / Leadership Outcomes	• Reduced Administrative burden • Economic Impact • e-Democracy (Participation)
Society Outcomes	• Participation (e-Democracy) • Digital Divide • Multi Channel Service Delivery • Stakeholder Benefit
Customer Focused Outcomes	• Service Responsiveness • Service Quality • Service Accessibility • Increased Stakeholder Value
Trust Outcomes	• Adoption and Participation • Security and Privacy • Transparency and accountability
ICT Outcomes	• ICT Infrastructure and Access • Access and Use of ICT by Households and Individuals • Use of ICT by Businesses • ICT Sector and Trade in ICT Goods
Process Effectiveness Outcomes	• Timeliness • Service efficiency • Integration of Services • Component Packaging • Emergency Readiness • Management and Innovation
Product and Services Outcomes	• Service Depth • Service Maturity • Service Availability and Accessibility • Service Support Management • Service Delivery Management
Financial and Market Outcomes	• Financial Value • Financial Efficiency • Cost Saving and Avoidance • Value to Cost Ratio
Workforce Outcomes	• Workforce Satisfaction • Workforce Development • Workforce Empowerment • Workforce Change and Cultural Issues

Details of Proposed e-Government performance measurement framework

The following tables describe the details of the proposed e-Government performance measurement framework. The measurement parameters, indicators and how to measure were taken from multiple sources as part of the research and document analysis of national and state e-Government strategy plans and performance measurement reports.

Some of the prominent sources for these framework measurement parameters were E-strategies Monitoring and Evaluation Toolkit (The World Bank, 2005), eGovernment Economics Project (eGEP): Measurement Framework Final Version (European Commission DG Information Society, 2006b), Towards an Excellent Service (Commission for Architecture and the Built Environment, 2006), Evaluation Framework for the Government On-line (GOL) Initiative (Public Works and Government Services Canada, 2005) , Core ICT Indicators: Partnership on Measuring ICT for Development (International Telecommunication Union, 2005), The Gartner Framework for e-Government Strategy Assessment (Gartner Research, 2002) , Measuring e-Government in Italy (Corsi & Gullo, 2003), Introducing Excellence (EFQM, 2003), Criteria for Performance Excellence (Baldrige National Quality Program, 2007b), E-governance assessment frameworks (Rao, Rao, Bhatnagar, & Satyanarayana, 2004).

Leadership Focus (Enabler)

Parameter	**Indicator**	**How to measure**
Leaders develop the mission, vision, values and ethics with clarity of purpose and direction within the organization.	• Vision and values • Organizational governance • Legal and ethical behavior	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Observation.
Align business operations with Vision and Mission.	• Strategic Direction • Meet and exceed legislative requirements • Balanced approach to management of risk	• Interviews with senior executives. • Advisory Committee/Panel reports. • Administrative records. • Observation.
Integrate continuous improvement into normal business operations	• Role models for improvement • Continuous Improvement	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Observation.
Leaders interact with customers, partners and representatives of society	• Environmental and community contribution • Manage, Monitor and review relationships with key stakeholders • Collaboration • Partnerships	• Interviews with senior executives. • Third Party Assessment • Advisory Committee/Panel reports • Random sample survey • Observation.
Leaders motivate, support and recognize people in the organization to improve services.	• Equal opportunities and diversity • Communication • Value and support people • Celebrate success • Organizational culture	• Interviews with senior executives. • Employee Surveys • Third Party Assessment • Random sample survey. • Observation.

Policy & Strategy Focus (Enabler)

Parameter	**Indicator**	**How to measure**
The organization has a clear strategy for the development of e-Government strategy and delivering outcomes from it.	• Organizational Strategy planning process • Organizational Policies and strategies • National and regional strategies & priorities	• Organizational Strategy document. • Interviews with senior executives. • Administrative records. • Organizational Reports. • Observation.
Identify and prioritize opportunities for improvement with input from key stakeholders	• Effective service to Customers • Citizen centered services instead of agency-centered.	• Organizational Strategy document. • Interviews with senior executives. • Administrative records. • Observation.
Strategies with tangible targets to be accomplished are formulated.	• Results oriented, producing measurable improvements for Citizens / Business etc. • Market based, actively promoting innovation.	• Organizational Strategy document. • Interviews with senior executives. • Administrative records. • Observation.
Strategy Development	• Strategy development process • Defining Strategic objectives	• Organizational Strategy document. • Interviews with senior executives. • Administrative records. • Observation.
Strategy Deployment	• Action plan development and deployment • Performance projection • e-Government Strategic plan	• Organizational Strategy document. • Interviews with senior executives. • Administrative records. • Observation.

Customer and Market Focus (Enabler)

Parameter	**Indicator**	**How to measure**
Customer, Market and Product Knowledge.	• Understanding of competitive advantage. • Enhanced market share. • Understanding of competitive advantage.	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.
Management of Customer Relationships and Satisfaction.	• Identify customers. • Determine what customers want. • Learn how to meet and continuously improve customer service.	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.
Ensure products and services meet customer needs.	• Strong customer loyalty and retention. • Sustained success for the organization. • Simplify data access • Promoting Customer participation in policy making process	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.
Methods are deployed to learn what the customer wants.	• e-filing of Customer petitions. • Customer feedback in decision making. • Customers are asked if they are satisfied with products and services provided.	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.
Improve the organization's responsiveness to change in customer needs.	• Delighted customers. • Enhanced market share. • Bring Customer closer to Government.	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.

Partnership & Resource Focus (Enabler)

Parameter	**Indicator**	**How to measure**
Develops partnerships in order to meet Organizational Strategic objectives	• Partnership status • Partnership role and responsibilities • Effective representation • Capacity building • Trust	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.
Continuous review and monitoring of partnership.	• Monitoring and evaluation • Rationale and value • Consistency among partners • Evaluation of partnerships	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.
Seeks resources from outside the organization to meet its strategic objectives.	• External resources • External investment Inter agency / Inter department project initiatives	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.
Supplier/Partner Management	• Increased value for Partners and suppliers. • Improved competitiveness. • Optimizing core competencies. • Improved effectiveness and efficiency. • Improved chances of survival. • Shared risk and cost.	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.

ICT Focus (Enabler)

Parameter	**Indicator**	**How to measure**
Development of ICT Infrastructure	• Existence of infrastructure • Existence of regulatory environment to support ICT growth • ICT Access points	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Survey on ICT usage • International ranking studies • Third Party Assessment. • Observation.
Affordable access to Customers	• Low cost access to ICT services • Multi of channel access to Government services • Use of ICT by Households and Individuals • Use of ICT by Businesses	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Survey on ICT usage • International ranking studies • Third Party Assessment. • Observation.
Development ICT Skills	• e-Literacy • Digital divide • Adoption of e-Government services	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Survey on ICT usage • International ranking studies • Third Party Assessment. • Observation.
Architecture and Standards	• Architecture standards compliance. • Open standards compliance. • Use of Open Source software systems. • Adoption of metadata standards. • System inter-operability	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Survey on ICT usage • International ranking studies • Third Party Assessment. • Observation.

Public Trust Focus (Enabler)

Parameter	**Indicator**	**How to measure**
Availability of organizational information to Customers (transparency)	• Transparent Government. • Availability of Organizational contacts. • Availability of Organizational structure and operation. • Contact information for issues and information • Broad Accessibility to Organizational information • Provision for Customer responses. • Effective communication with Customers.	• Interviews with senior executives. • Organizational Reports. • Administrative records. • Pop-up Surveys. • User Satisfaction Data. • International ranking studies • Third Party Assessment. • Observation.
Organizational providing policies, procedures and plans to implement Security and Privacy	• Greater Government accountability. • Security policies, procedures, and plans. • Security and Authentication. • Secure and trusted environment e-Government transactions. • Risk mitigation & risk management. • Electronic payment mechanism.	• Interviews with senior executives. • Organizational Policy Report on Security and Privacy. • Administrative records. • Pop-up Surveys. • User Satisfaction Data. • International ranking studies • Third Party Assessment. • Observation.

Front Office / Multi Channel Management (Process)

Parameter	**Indicator**	**How to measure**
Provision of Government services on Multiple Channels	• Office/Desk • Telephone/Fax • Call Centers • Mobile Devices • World Wide Web • Digital TV / Radio • Intermediary Services • Availability of alternative service channel delivery in case of breakdowns.	• Organizational Reports. • Automatic Web Crawler Software Data. • Pop-up Surveys. • User Satisfaction Data. • International ranking studies. • Web metrics Data. • Third Party Assessment. • Observation.
Marketing and Communicating Government service delivery on Multiple Channels	• Marketing Online service availability • Usage of Online service compared to other channels of service • User awareness of Online service delivery • Increased transaction of services.	• Organizational Reports. • Automatic Web Crawler Software Data. • Pop-up Surveys. • User Satisfaction Data. • International ranking studies. • Web metrics Data. • Third Party Assessment. • Observation.
Integration of Channel Services	• Horizontal and Vertical integration of Government services. • Collaboration with Federal, State and Local Government. • Services are provided by function as opposed to by departments / divisions. • Availability of One Stop Portal • Customer centered services.	• Organizational Reports. • Automatic Web Crawler Software Data. • Pop-up Surveys. • User Satisfaction Data. • International ranking studies. • Web metrics Data. • Third Party Assessment. • Observation.

Back office Management (Process)

Parameter	Indicator	How to measure
Information and Data Management	• Data storage • Internal & External data Sharing • Data Reliability and Quality • Data Standardization	• Organizational Reports. • Automatic Web Crawler Software Data. • Pop-up Surveys. • User Satisfaction Data. • International ranking studies. • Web metrics Data. • Third Party Assessment. • Observation.
Reliability and Availability of systems	• Current infrastructure and identification of improvements • System capacity • System availability	• Organizational Reports. • Automatic Web Crawler Software Data. • Pop-up Surveys. • User Satisfaction Data. • International ranking studies. • Web metrics Data. • Third Party Assessment. • Observation.
Financial Management of Technology expenses	• Hardware cost • Software licensing costs • Support Costs • Operations and Maintenance Costs • Training and User Costs • Facilities Cost	• Organizational Reports. • Administrative records. • Organizational Reports. • Standard Cost Model Calculations • Advisory Committee/Panel reports. • Third Party Assessment. • Observation.
Back Office Efficiency	• Response Time • Interoperability • Improvement in technical capabilities • Elimination of IT redundancies. • Integration of systems with legacy applications. • Scalability of systems.	• Organizational Reports. • Administrative records. • Automatic Web Crawler Software Data. • Pop-up Surveys. • User Satisfaction Data. • International ranking studies. • Web metrics Data. • Third Party Assessment. • Observation.
Back Office Effectiveness	• User Satisfaction • User Requirements • Accessibility • Contribution to Stakeholders needs	• Organizational Reports. • Administrative records. • Automatic Web Crawler Software Data. • Pop-up Surveys. • User Satisfaction Data. • International ranking studies. • Web metrics Data. • Third Party Assessment. • Observation.

Workforce Management (Process)

Parameter	**Indicator**	**How to measure**
Workforce development in line with the organization's aims and objectives.	• Priorities and targets • Strategies for equal opportunities • Promoting equality • Improve workforce morale, reduce absenteeism • Health, safety and well-being	• Organizational HR Records. • Administrative records. • Employee Surveys. • Third Party Assessment. • Random sample survey. • Observation.
Workforce Environment	• Workforce capability and capacity • Workforce climate • Workforce Involvement & Commitment • Create support for change • Feedback	• Organizational HR Records. • Administrative records. • Employee Surveys. • Third Party Assessment. • Random sample survey. • Observation.
Workforce Engagement	• Workforce empowerment • Workforce enrichment • Workforce and leader development • Assessment of Workforce engagement • User group reviews.	• Organizational HR Records. • Administrative records. • Employee Surveys. • Third Party Assessment. • Random sample survey. • Observation.
Workforce knowledge and competencies are identified, developed and sustained	• Workforce Education, Training & Development • Workforce resources are planned, managed and improved	• Organizational HR Records. • Administrative records. • Employee Surveys. • Third Party Assessment. • Random sample survey. • Observation.
Workforce are rewarded, recognized and cared for	• Workforce Performance & Recognition • Involvement • Confidence	• Organizational HR Records. • Administrative records. • Employee Surveys. • Third Party Assessment. • Random sample survey. • Observation.

Process Management (Process)

Parameter	**Indicator**	**How to measure**
Products and Services are designed and developed based on stakeholders' needs and expectations.	• Process Development. • Process Management and Improvement. • Quality of product and services.	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Third Party Assessment. • Random sample survey. • Observation.
Processes are continuously improved to generate increasing value and to produce better results in accordance with strategies.	• Process Development. • Process Control. • Process Improvement. • Continuous Improvement.	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Third Party Assessment. • Random sample survey. • Observation.
Develop a process improvement culture using quality management principles	• Process Improvement. • Continuous Improvement. • System Development Lifecycle • Status of development projects • Risk Management • Prioritizing Project initiatives	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Ranking studies • Third Party Assessment. • Random sample survey. • Observation.
Processes are continuously improved utilizing stakeholders feedback and opinion.	• Enhanced confidence of stakeholders. • Customer relationships are managed and enhanced. • Supplier and Partnering Process. • Continuous Improvement.	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Stakeholder forums. • Third Party Assessment. • Random sample survey. • Observation.
Work processes are clearly defined and documented, allowing the entire workforce to understand them.	• Effective and realistic decision-making. • Innovation Process. • Effective management of risk.	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Employee Surveys. • Third Party Assessment. • Random sample survey. • Observation.

Measurement, Analysis and Knowledge Management

Parameter	**Indicator**	**How to measure**
Establish data and information systems to support achievement of mission and goals	• Measurement data are utilized in strategy formulation. • Knowledge capture and sharing. • Quality of Project documentation. • Quality of User manuals.	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Organizational service delivery statistics. • Third Party Assessment. • Random sample survey. • Observation.
Creation, collection and management of organizational knowledge	• Clarity and purpose • Learning • Improved value generation. • Improved effectiveness and efficiency.	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Organizational service delivery statistics. • Third Party Assessment. • Random sample survey. • Observation.
Inform decision making through accurate, reliable and timely data.	• Data appropriateness • Information quality • Increased competitiveness. • Innovation in products and services.	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Organizational service delivery statistics. • Third Party Assessment. • Random sample survey. • Observation.
Knowledge Management for Organizational Performance	• Performance measurement • Performance analysis, review, and improvement • Performance tracking • Quality of reporting	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Organizational service delivery statistics. • Third Party Assessment. • Random sample survey. • Observation.
Management of Information Technology.	• Management of Information Technology resources • Data and knowledge management • Information quality • Analysis and dissemination	• Organizational Reports. • Administrative records. • Existing performance measurement results. • Organizational service delivery statistics. • Third Party Assessment. • Random sample survey. • Observation.

Political / Leadership Outcomes (Results)

Parameter	**Indicator**	**How to measure**
Reduced Administrative burden	• Time saving for Citizens per transaction • Time saving for Businesses per transaction • Cost savings for Citizens (travel, postage, fees to intermediaries) • Cost savings for Businesses (travel, postage fees to intermediaries) • One stop Portal • Providing seamless services.	• Interviews with senior executives. • Organizational Reports. • Advisory Committee reports. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Economic Impact	• IT Skill supply • IT Skill demand • G2C, G2B, G2G, G2E transaction volumes • Technology Penetration	• Interviews with senior executives. • Organizational Reports. • Advisory Committee reports. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey. • Observation.
e-Democracy (Participation)	• Availability of public access points • Online voting • Online forum interaction • Access to policy information • Availability of online appeals procedures • E-mails and web page access on opinion and policy pages	• Interviews with senior executives. • Organizational Reports. • Advisory Committee reports • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey. • Observation.

Society Outcomes (Results)

Parameter	**Indicator**	**How to measure**
Participation (e-Democracy)	• Usage of electronic Job, e-Learning, e-Health Portals • Usage to receive Welfare benefits. • Internet Usage by age/ income/ educational attainment. • Usage by socially disadvantaged groups.	• Interviews with senior executives. • Organizational Reports. • Advisory Committee reports. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Digital Divide	• Technology penetration. • Knowledge accumulation. • Skill demand and supply. • Affordable access to internet. • Availability of Public access points.	• Interviews with senior executives. • Organizational Reports. • Web site statistics. • Advisory Committee reports. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Multi Channel Service Delivery	• Number of different channels for service provision (Office/Desk , Telephone/Fax, Call Centers, Mobile Devices, World Wide Web, Digital TV / Radio, Intermediary Services) • Percentage of online transactions by channels. • Ratio of online transaction growth compared to other channel provisions.	• Interviews with senior executives. • Organizational Reports. • Advisory Committee reports. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Stakeholder Benefit	• Fast delivery of information. • 24X7 Service availability • Convenient Government services for stakeholder. • Enhanced information dissemination. • Stakeholder Satisfaction • Stakeholder Retention.	• Interviews with senior executives. • Organizational Reports. • Advisory Committee reports. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.

Customer Focused Outcomes (Results)

Parameter	**Indicator**	**How to measure**
Service Responsiveness	• New Customers and Market Penetration • Frequency and Depth • Service Efficiency • Service automation • Service integration • Reduction in waiting times for services • Off-hours service usage and support. • Speed of service delivery.	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Service Quality	• Service availability. • Accuracy of service or product delivered • Errors • Complaints • Track obsolete / broken links to site • Web server failure errors • Server utilization and availability • Consistency of response time. • Compliance to service time frame.	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Service Accessibility	• Ease of access to service. • User friendliness. • Consistent look and feel • Multi-lingual access • Access for people with disabilities • Monitor Section 508 compliance on services	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Increased Stakeholder Value	• Faster service for Customers • Easier service for Customers • Lower cost of service for Customers • Sustainable and better experience for Customer • Building services around Customer needs	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.

Trust Outcomes (Results)

Parameter	**Indicator**	**How to measure**
Adoption and Participation	• Involvement in governance. • Contribution of information by end users. • Level of usage by the targeted end users.	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Security and Privacy	• Extent to which security is improved and privacy addressed. • Users willingness to report address security and privacy issues online • Users trust in providing personal information online. • Availability of electronic payment transaction.	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Transparency and accountability	• Availability of online organizational chart with responsibility and contact information. • Online information clarity and accuracy • Reporting budget and expenditure online • Number of processes fully traceable online	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Stakeholder forums. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.

ICT Outcomes (Results)

Parameter	**Indicator**	**How to measure**
ICT Infrastructure and Access	• Fixed telephone lines per 100 inhabitants • Mobile cellular subscribers per 100 inhabitants • Computers per 100 inhabitants • Internet subscribers per 100 inhabitants • Broadband Internet subscribers per 100 inhabitants	• Third Party Assessment. • International Ranking studies. • Academic Research studies. • Observation.
Access and Use of ICT by Households and Individuals	• Proportion of households with a radio • Proportion of households with a TV • Proportion of households with a fixed line telephone • Proportion of households with a mobile cellular telephone • Proportion of households with a computer	• Third Party Assessment. • International Ranking studies. • Academic Research studies. • Observation.
Use of ICT by Businesses	• Proportion of businesses using computers • Proportion of employees using computers • Proportion of businesses using the Internet • Proportion of employees using the Internet • Proportion of businesses with a Web presence	• Third Party Assessment. • International Ranking studies. • Academic Research studies. • Observation.
ICT Sector and Trade in ICT Goods	• Proportion of total business sector workforce involved in the ICT sector • Value added in the ICT sector (as a percentage of total business sector value added) • ICT goods imports as a percentage of total imports • ICT goods exports as a percentage of total exports	• Third Party Assessment. • International Ranking studies. • Academic Research studies. • Observation.

Process Effectiveness Outcomes (Results)

Parameter	**Indicator**	**How to measure**
Timeliness	• Response Time • Delivery Time • Cycle Time • Average transaction processing time	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Service efficiency	• Service availability • Workflow process accessible to Customers • Access to services • Average transaction processing time • Average download times for forms and reports	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Integration of Services	• Integrated back office across the agencies / departments • Collaborative multi-agency working • Support from backend and front-line staff • Number of pre-filled forms • Integration of services for G2C, G2B, G2G, G2E	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Component Packaging	• Shared components • Reusable components • Scalable components • Adaptable components to policy and practice changes	• Interviews with senior executives. • Organizational service delivery statistics. • Third Party Assessment. • Observation.
Emergency Readiness	• Emergency Management Plan • Emergency Preparedness • Disaster Recovery • Continuity of Operation	• Interviews with senior executives. • Organizational service delivery statistics. • Third Party Assessment. • Observation.
Management and Innovation	• Project Management • Portfolio Management • Risk Management • Back office Integration	• Interviews with senior executives. • Organizational service delivery statistics. • Third Party Assessment. • Observation.

Product and Services Outcomes (Results)

Parameter	**Indicator**	**How to measure**
Service Depth	• Number of transactions per channel • Number of Services on-line • Use of on-line services • User session per time period • Unique to repeat customers • Type of Channel • Type of constituency	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Service Maturity	• Level of interaction • Information-type state • One-way interaction state • Two-way interaction state • Transaction-type state • Integrated-type state	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Service Availability and Accessibility	• 24X7 availability of services. • Service data accessible to people with special needs • Total service availability • Planned and unplanned downtime	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Service Support Management	• Incident Management • Problem Management • Change Management • Configuration Management • Release Management	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Random sample survey • Observation.
Service Delivery Management	• Availability Management • Service Continuity Management • Capacity Management • Service Level Management	• Interviews with senior executives. • Organizational service delivery statistics. • Web site statistics. • Random sample survey • Observation.

Financial and Market Outcomes (Results)

Parameter	**Indicator**	**How to measure**
Financial Value	• Agency Financial Value (Cost, Revenue & Efficiency) • Customer Financial Value (Cost, Revenue & Efficiency) • Social Economic Value (increased user participation, increased access to government programs, decreased government payment) • Social worth (increased educational, health, employment outcomes)	• Interviews with senior executives. • Organizational service delivery statistics. • Standard Cost Model Calculations. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Financial Efficiency	• Recovery of Capital cost. • Financial performance and cost-effectiveness of ICT. • Economies of scale gains. • Full time equivalent gains • Reduction in overhead costs • Decrease in processing time.	• Interviews with senior executives. • Organizational service delivery statistics. • Standard Cost Model Calculations. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Cost Saving and Avoidance	• Financial Management & Planning • Average savings in service Value • Reduction in administrative burden for citizen, business etc. • Savings in overhead costs (postage, paper, print) • Cashable financial gains	• Interviews with senior executives. • Organizational service delivery statistics. • Standard Cost Model Calculations. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.
Value to Cost Ratio	• Cost per transaction • Overall IT Cost • Overall Non-IT Cost • Saving results from reduced online service delivery • Transaction per employee	• Interviews with senior executives. • Organizational service delivery statistics. • Standard Cost Model Calculations. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Random sample survey • Observation.

Workforce Outcomes (Results)

Parameter	**Indicator**	**How to measure**
Workforce Satisfaction	• Staff satisfaction rating • Workforce Recruitment & Retention • Staff mobility	• Interviews with senior executives. • Employee Surveys. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Observation.
Workforce Development	• Workforce training. • Capability Development • Build resource capacity • Skills and Resource gaps • Staff with ICT skills • Access to research	• Interviews with senior executives. • Employee Surveys. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Observation.
Workforce Empowerment	• Better empowered employees • Employee Satisfaction & Quality of Work life • Employee Development • Employee Ratios	• Interviews with senior executives. • Employee Surveys. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Observation.
Workforce Change and Cultural Issues	• Change to working practices and processes. • Engage workforce in the change process. • Resistance of workforce for change process. • Closer communication to back-end and front-line staff on change process.	• Interviews with senior executives. • Employee Surveys. • Public Opinion Research. • Third Party Assessment. • Ranking studies. • Observation.

Case Studies

In order to validate the proposed e-Government performance measurement framework, the following national e-Government Strategies were identified. A brief summary of each nation's e-Government strategy was described to assist the validation of the model. Proposed model was validated with an illustrative case study approach using documentary analysis and not any direct observations.

National e-Government Strategies for case study validation

- US e-Government Strategy (2003)
- UK e-Government Strategy (2005)
- Australian e-Government Strategy (2006)
- New Zealand e-Government Strategy (2006)
- India Nation e-Government Plan (2006)

US e-Government Strategy (Office of Management and Budget, 2003)

Strategy Goals	• Agencies are focusing IT spending on high priority modernization initiatives. • Major IT projects are within 10% of cost/schedule/performance objectives. • Major IT systems are certified, accredited, or otherwise authorized as being properly secured. • Presidential e-Government initiatives are operational and yield benefits (for example, cost reduction, response time, burden reduction, improved citizen service, etc.). • Negotiate government-wide Enterprise Software licenses. • Reduce redundant IT spending in the six overlapping lines of business identified in the FY04 Budget, by defining government-wide solutions.
Focus Areas	• Driving results and productivity growth: IT and management reform investments that create an order of magnitude improvement in value to the citizen, especially in the areas of homeland security information sharing and knowledge flow; • Controlling IT costs: Consolidating redundant and overlapping investments, enterprise licensing, fixing cost overruns, and competing away excess IT services charges • Implementing the e-Government Act of 2002: Including government-wide architecture governance and web-based strategies for improving access to high quality information and services; • Improving cyber security: Desktop, data, applications, networks, threat and vulnerability-focused, business continuity, and privacy protection; and • Building an effective IT workforce: Obtaining needed project management – CIO

	staff and architects who have a passion for solutions for success in leveraging IT spending for strategic results vs. piecemeal, redundant, poorly-defined and technology-focused IT investments.

Strategic Objectives

Individuals/Citizens - Government-to-Citizens (G2C):	• Reduce the average time for citizens to find benefits and determine eligibility • Reduce the number of clicks to access relevant loan information • Increase the number of citizens filing taxes electronically • Reduce the time for citizens to find information on recreational opportunities
Businesses - Government-to-Business (G2B):	• Increase the ability for citizens and businesses to find, view, and comment on rules and regulations • Reduce burden on business by enabling online tax filing • Reduce the time to fill out export forms and locate information • Reduce time for businesses to file and comply with regulations
Intergovernmental - Government-to-Government (G2G):	• Decrease response times for jurisdictions and disciplines to respond to an emergency incidents • Reduce the time to verify birth and death entitlement information • Increase the number of grant programs available for electronic application
Intra-governmental - Internal Efficiency and Effectiveness (IEE):	• Increase availability of training programs for government employees • Reduce the average time to process clearance forms • Increase use of E-Travel services within each agency • Reduce the time for citizens to search for federal jobs • Reduce time and overhead cost to purchase goods and services throughout the Federal government

UK e-Government Strategy (Cabinet Office, 2005)

Strategies	Strategic Goals	Strategic Priorities
Citizen and Business Centered Services	Services enabled by IT must be designed around the citizen or business, not the provider, and provided through modern, coordinated delivery channels. This will improve the customer experience, achieve better policy outcomes, reduce paperwork burdens and improve efficiency by reducing duplication and routine processing, leveraging delivery capacity and streamlining processes.	• Systematically engage with citizens, business and front-line public servants to understand and then specify the transformational changes which service providers need to meet - learning from the best practice already within the public sector, from other governments and from the private sector. • Appoint Customer Group Directors for particular groups of the citizen/business population to lead the design of services, working to Ministerial leadership. • Create a Service Transformation Board whose role is to set overarching service design principles, promote best practice, signpost the potential from technology futures and challenge inconsistency with agreed standards. • Develop modern channels for citizen and business access to services, and actively manage the shift in channels towards the most efficient and effective.
Shared Services	Government must move to a shared services culture - in the front-office, in the back-office, in information and in infrastructure - and release efficiencies by standardization, simplification and sharing.	• Customer Service centers • Human Resources, Finance and other corporate services • Common Infrastructure • Data Sharing • Information Management • Information Assurance • Identity Management • Technology standards and architecture
Professionalism	There must be broadening and deepening of government's professionalism in terms of the planning, delivery, management, skills and governance of IT enabled change. This will result in more successful outcomes; fewer costly delivery failures; and increased confidence by citizens and politicians in the delivery of change by the public services.	• Leadership and Governance • Portfolio Management • IT Profession in Government • Reliable Project Delivery • Supplier Management • Innovation

Australian e-Government Strategy (Australian Government Information Management Office, 2006)

Strategies	Strategic Goals	Strategic Priorities
Meeting users' needs	• Government services will be widely available through participating private sector providers. People will be able to choose who they contact for government services. • Fully functional personalized accounts will be available. • Significantly, simplified sign-on to government will be available. This will be a single sign-on, except where circumstances require otherwise.	• Security and privacy • Measuring user needs and preferences • The Government entry point • User accounts and personalized services • Visible and traceable services • Increasing user awareness of service delivery options • Online engagement with Government
Establishing connected service delivery	• Connected government will be fully established. • People will be able to package together different services from different agencies. • Private sector providers will be able to package government services with their own.	• Reform and transformation • Technology enablement
Achieving value for money	• ICT investment will be well planned and managed, delivering the responsiveness and value for money required by government. Government investments in technology will have clear benefits and returns. • There will be widespread re-use of agency systems.	• A robust investment framework • Project management capability • Inter and intra-agency re-use and sharing of systems
Enhancing public sector capability	• The public sector will have addressed all gaps in capability, and will be widely recognized as an exemplar in capability development. There will be a 'virtuous circle' between capability and implementation of this strategy, with each reinforcing the other—with capability and skills enhanced as various aspects of the strategy are achieved.	• Service capability and maturity • Skills development • ICT procurement • Employee identity management • Enable the legislative framework where necessary

New Zealand e-Government Strategy (State Service Commission, 2006)

Strategies	Strategic Goals	Strategic Priorities
Convenience and satisfaction	1. Delivering government services.	Agencies provide transformed service delivery through online services that are user-centred, convenient, integrated, proactive, inclusive, and efficient.
	2. Enabling variety in delivery	Access to government services and information reflects the varying needs of Citizens and their families, and businesses.
	3. Adding value to information	People know government information is well-managed and they can readily access digital content and heritage held by government.
	4. Providing authoritative data	Authoritative government registries and other databases mean each provides a single source of data that can be used across government, and that can be accessed to inform policy development and public engagement.
Integration and efficiency	5. Delivering value for money	Using technology adds value for both users and government. Identify and use opportunities to achieve synergies and ensure technology is used efficiently and effectively.
	6. Building standards and interoperability	Government adopts and uses common standards to ensure agencies and their partners can work together, and users can access government services and information.
	7. Building the foundational infrastructure	Government gains technology efficiencies by developing, managing, and operating common tools and networks which enable collaboration and cost-effective service delivery.
	8. Addressing collaboration	Legislation, administrative practices, and organizational cultures allow data and information to be exchanged and used, and support the governance and funding of technology-based initiatives
	9. Providing collaborative tools	State servants are given collaborative tools to enhance communication and professional development, and allow them to work and share in cross-agency projects and activities.
	10. Fostering innovation and the use of technology	State servants know how technology can help them deliver better government outcomes and contribute to a dynamic work environment.
	11. Building ICT professionalism	Foster the development of a competency and skills framework and culture for government ICT professionals.
Trust and participation	12. Enhancing public engagement	People are able to contribute online to government policy and service design, development, and delivery and interact with government.
	13. Strengthening trust and security	People are confident that accessing New Zealand government online is secure and trust that government-held information is protected from security threats.
	14. Managing the gov space	People have ready access to reliable, authoritative and trusted government information and services across the Internet.

India Nation e-Government Plan (NeGP) (Department of Information Technology, 2006)

NeGP Vision

Make all Government services accessible to the common man in his locality, through common service delivery outlets and ensure efficiency, transparency & reliability of such services at affordable costs to realize the basic needs of the common man.

NeGP e-Government Strategy

• The existing/ ongoing projects in the Mission Mode Projects (MMP) category, being implemented by various Central Ministries/Departments/States are to be suitably augmented/ modified to align them with the objectives of NeGP.
• For major projects the line Ministry concerned is to make use of e-Governance as also automation techniques from the inception stage.
• States have been given flexibility to identify a few additional state-specific projects, which are very relevant for the economic development of the State. In cases where Central Assistance is required, such inclusions will be considered on the advice of the concerned line Ministries/Departments.
• e-Governance will be promoted as a centralized Initiative, to the extent necessary, to ensure citizen service orientation, to realize the objective of interoperability of various e-Governance applications and to ensure optimal utilization of ICT infrastructure/ resources.
• Public Private Partnerships would be promoted wherever feasible to enlarge the resource pool without compromising on the security aspects and for this purpose.
• Adoption of unique identification codes for Citizen, Business and Property will be promoted to facilitate integration and avoid ambiguity.

Case Study Validation

In order to validate the framework, documentary analysis of the national e-Government strategy plans were used. The following tables describe the Category items of the measurement model and whether the category is part of national e-Government strategy plan. For validation, case studies from developed countries (US e-Government Strategy, UK e-Government Strategy, Australian e-Government Strategy, New Zealand e-Government Strategy) and developing country (India Nation e-Government Plan) were used. In addition, the research also examined many federal agencies and state web sites in US as additional reference of e-Government strategy plans.

The research validated the study by finding evidence of performance measures that were part of the implementation and monitoring process of the strategic planning process. Research did review existing relevant information regarding performance data quality where available, but did not systematically assess the quality of the performance information used in the examples cited.

Enabler Validation

Item		US Strategy	UK Strategy	Australia Strategy	New Zealand Strategy	India Strategy
	● Leadership Focus	X			X	
	Leaders develop the mission, vision, values and ethics with clarity of purpose and direction within the organization.					
	Align business operations with Vision and Mission.					
	Integrate continuous improvement into normal business operations					
	Leaders interact with customers, partners and representatives of society					
	Leaders motivate, support and recognize people in the organization to improve services.					
	● Policy & Strategy Focus	X	X	X	X	X
	The organization has a clear strategy for the development of e-Government strategy and delivering outcomes from it.					
	Identify and prioritize opportunities for improvement with input from key stakeholders					
	Strategies with tangible targets to be accomplished are formulated.					
	Strategy Development					
	Strategy Deployment					
	● Customer and Market Focus	X	X	X	X	X
	Customer, Market and Product Knowledge.					
	Management of Customer Relationships and Satisfaction.					
	Ensure products and services meet customer needs.					
	Methods are deployed to learn what the customer wants.					
	Improve the organization's responsiveness to change in customer needs.					
	● Partnership & Resource Focus			X	X	
	Develops partnerships in order to meet Organizational Strategic objectives					
	Continuous review and monitoring of partnership.					
	Seeks resources from outside the organization to meet its strategic objectives.					
	Supplier/Partner Management.					
	● ICT Focus	X		X	X	X
	Development of ICT Infrastructure					
	Affordable access to Customers					
	Development ICT Skills					
	Architecture and Standards					
	● Public Trust Focus	X	X	X	X	X
	Availability of organizational information to Customers (transparency)					
	Organizational providing policies, procedures and plans to implement Security and Privacy					

Table 38. Enabler Validation

Process Validation

Item		US Strategy	UK Strategy	Australia Strategy	New Zealand Strategy	India Strategy
	● Front Office / Multi Channel Management	X	X	X	X	
	Provision of Government services on Multiple Channels					
	Marketing and Communicating Government service delivery on Multiple Channels					
	Integration of Channel Services					
	● Back office Management	X	X	X	X	X
	Information and Data Management					
	Reliability and Availability of systems					
	Financial Management of Technology expenses					
	Back Office Efficiency					
	Back Office Effectiveness					
	● Workforce Management	X	X	X	X	X
	Workforce development in line with the organization's aims and objectives.					
	Workforce Environment					
	Workforce Engagement					
	Workforce knowledge and competencies are identified, developed and sustained					
	Workforce are rewarded, recognized and cared for.					
	● Process Management	X	X	X	X	X
	Products and Services are designed and developed based on stakeholders' needs and expectations.					
	Processes are continuously improved to generate increasing value and to produce better results in accordance with strategies.					
	Develop a process improvement culture using quality management principles.					
	Processes are continuously improved utilizing stakeholders feedback and opinion.					
	Work processes are clearly defined and documented, allowing the entire workforce to understand them.					
	● Measurement and Knowledge Management	X	X	X	X	X
	Establish data and information systems to support achievement of mission and goals					
	Creation, collection and management of organizational knowledge					
	Inform decision making through accurate, reliable and timely data.					
	Knowledge Management for Organizational Performance					
	Management of Information Technology.					

Table 39. Process Validation

Results Validation

Item		US Strategy	UK Strategy	Australia Strategy	NewZealand Strategy	India Strategy
	● Political / Leadership Outcomes	X	X	X	X	
	Reduced Administrative burden					
	Economic Impact					
	e-Democracy (Participation)					
	● Society Outcomes	X			X	
	Participation (e-Democracy)					
	Digital Divide					
	Multi Channel Service Delivery					
	Stakeholder Benefit					
	● Customer Focused Outcomes	X	X	X	X	X
	Service Responsiveness					
	Service Quality					
	Service Accessibility					
	Increased Stakeholder Value					
	● Trust Outcomes	X			X	
	Adoption and Participation					
	Security and Privacy					
	Transparency and accountability					
	● ICT Outcomes	X	X	X	X	
	ICT Infrastructure and Access					
	Access and Use of ICT by Households and Individuals					
	Use of ICT by Businesses					
	ICT Sector and Trade in ICT Goods					
	● Process Effectiveness Outcomes	X	X	X	X	X
	Timeliness					
	Service efficiency					
	Integration of Services					
	Component Packaging					
	Emergency Readiness					
	Management and Innovation					
	● Product and Services Outcomes	X	X	X	X	X
	Service Depth					
	Service Maturity					
	Service Availability and Accessibility					
	Service Support Management					
	Service Delivery Management					
	● Financial and Market Outcomes	X	X	X	X	X
	Financial Value					
	Financial Efficiency					
	Cost Saving and Avoidance					
	Value to Cost Ratio					

	● Workforce Outcomes	X	X	X	X	X
	Workforce Satisfaction					
	Workforce Development					
	Workforce Empowerment					
	Workforce Change and Cultural Issues					

Table 40. Results Validation

Summary of results

The proposed e-Government performance measurement model was developed from the theoretical concepts (see section e-Government Performance Model – Theoretical Perspective) and from Baldrige Quality award system model (Baldrige National Quality Program, 2007b). Baldrige system model was modified to satisfy the requirements of e-Government measurements based on the study of existing e-Government measurement research, and performance measurement literature research in public and private sector.

In order to validate the framework, documentary analysis of the national e-Government strategy plans were used. For validation-Government strategy documents were collected from four developed countries and one developing country. In addition, the research also examined many federal agencies and state web sites in US as additional reference of e-Government strategy plans.

The research validated the study by finding evidence of performance measures that were part of the implementation and monitoring process of the strategic planning process. Research did review existing relevant information regarding performance data quality where available, but did not systematically assess the quality of the performance information used in the examples cited.

The results of proposed measurement framework categories were validated by documentary analysis of the different national e-Government strategies (see section Case Study Validation). The validation did not identify each item within the measurement framework categories for evidences in national strategy documents. In the enabler section, Leadership focus and Partnership focus were not clearly identified by all the evaluated strategies. In the results section, Society outcomes and Trust outcomes were also not clearly identified by some of the evaluated strategies.

The study was not designed to be an impact evaluation, including both an experimental and control group of e-Government stakeholders. Proposed e-Government performance measurement framework described how performance could be measured and used to make decisions, but did not attempt to verify that its use ultimately resulted in improved outcome.

The proposed measurement framework was not designed to rank e-Government initiatives from the most to the least valuable but it will allow Government organizations to identify the customer need s and reprioritize the e-Government initiatives. This framework concentrated on how strategies are effectively delivered and how Government and stakeholders are benefited by the strategy.

The study proposed a comprehensive understanding of the enablers, process and outcomes drivers for the success of the e-Government initiatives. The proposed performance measurement framework was a comprehensive and practical framework for improvement and achieving effective citizen focused service and product delivery. The model was founded on the Quality Principles and could serve as a framework for effective public service organizations, at all levels.

Chapter 6

Conclusion, Implications, Recommendations, and Summary

Conclusions

The study proposed a comprehensive understanding of the benefits and drivers for the success for e-Government initiatives and also proposed an e-Government performance measurement model based on the existing performance measurement research.

Specific goal for essay 1 was to examine various e-Government performance measurement models, in the context they were proposed and being used. To identify existing e-Government benchmarking and performance evaluation studies, the study examined the existing e-Government performance research in Academic research, Public Sector and Private Sector. Study also looked at the e-Government phases / stages models from the existing research to better understand e-Government maturity. Finally essay was used to examine existing e-Government performance measurement models and analysis of their weakness.

Specific goals for essay 2 was to discuss and review the performance management / measurement strategy process in private, public sector and use private and public sector performance models and their potential application to e-Government. The second essay was used to examine existing performance measurement models and an analysis of their weakness.

From review of performance management / measurement strategy process in private and public sector performance models it was clear that the existing e-Government performance measurements was only providing partial evaluations and

could not give policy makers evaluation elements for their decisions. Most of the e-Government studies were assessed from only one perspective, citizens, businesses or public officials. Existing e-Government measurement were primarily one or more of the following (a) Input indicators (measure the resources countries have invested in e-Government), (b) Output indicators (measure the amount of e-Government applications realized), (c) Usage / Intensity indicators (measure the actual usage of e-Government by citizens / businesses), (d) Impact / Effect indicator (measure the impact e-Government such as changes in processing time or waiting time) and (e) Environmental / Readiness indicators (measure the countries readiness for the Information Society and its consequences). Issues analyzed by different evaluations lead to different outcomes and gave only part of the answer what was the level of e-Government in a given country or local community.

Specific goals for essay 3 was to develop into an e-Government framework for performance measurement based on the study of existing e-Government performance measurement research and performance measurement literature and research in private sector. Both essays 1 and 2 were be used as basic building blocks to develop the proposed e-Government performance measurement framework. Study will be made use of the best practices in the existing private / public sector performance measurement models and applied it in the context of e-Government for the proposed e-Government performance measurement framework.

Many of the performance studies were used as the main determinants of public opinion on e-Government and for developing e-Government strategy, it is very important that, what is being measured is crucial for the further development of e-Government.

Implications

Performance measurements provide the groundwork for creating a continuous improvement process that the organizations may use to move towards best practices in accomplishing their missions and advancing organizational objectives. They were not to be used as a test of success or failure, but as an ongoing process to help organizations measure progress towards their goals.

After examining the current e-Government measurement practices in the literature and investigating some theoretical work in this field, the results showed an unsatisfactory picture on the measurement of e-Government. It would be beneficial for both the citizens and the governments if a theoretical framework would be developed and a more or less standardized measurement instrument could become available. The current approaches did not support a comprehensive c-government assessment. The partial evaluations could not give policy makers evaluation elements for their decisions.

Building on previous studies, and recognizing the need to understand socio-economic and cultural factors, the proposed study should provide results that could be adapted for different federal, state and local e-Government initiatives. The proposed framework could serve as starting point for any organization, tailored to the strategic directions and performance requirements unique to each organization.

It would be beneficial, for both policy makers as well as for the stakeholders if an e-Government performance measurement framework was developed and a standardized measurement instrument become available. This would allow policy makers and designers to compare different e-Government approaches and learn from them and to become the most competitive in delivering the services.

Many of the performance studies are used as the main determinants of public opinion on e-Government and for developing e-Government strategy and it is very important that, what is being measured is crucial for the further development of e-Government. Thus e-Government performance measurement results will be an essential tool for policy makers to limit the margins for error when putting future strategies in place.

Recommendations

Research did review existing relevant information regarding performance data quality where available, but did not systematically assess the quality of the performance information used in the examples cited. This study was focused on the following nation's e-Government initiative namely USA, U.K, Australia and New Zealand as example of developed countries and India as example of developing country. The study was based on existing government and academic research literature and not based on actual data collection. Proposed e-Government performance measurement framework described how performance could be measured and used to make decisions, but did not attempt to verify that its use ultimately resulted in improved outcomes. Future studies could be organized as an impact evaluation, including both an experimental and control group of e-Government stakeholders.

The study did not take into consideration the actual needs of its stakeholders in different countries. The different countries may have different wants and needs for e-Government development and priorities. Study did not provide a breakdown of performance measurement for any specific stakeholder groups like citizens, business,

employees or government agencies. Future studies could be done to provide performance measurement framework for specific stakeholder groups.

The study did not differentiate the priorities of individual countries while taking into consideration in proposing the framework. Study did not take into account the maturity of the Information and Communication Technologies of individual countries or its capacity for the development of e-Government services. Future studies could be prepared to provide performance measurement framework by taking into consideration the e-Government readiness and maturity of the country.

Summary

e-Government has the potential to greatly improve how government operates internally and how it serves its customers. e-Government is much more than a tool for improving cost-quality ratios in public services. It is an instrument of reform and a tool to transform government. Thus, e-Government is not primarily about automation of existing procedures (which may or may not be effective), but about changing the way in which government conducts business and delivers services (The World Bank, 2005).

e-Government initiatives are expected to define anticipated results, continually focus attention towards results achievement, measure performance regularly and objectively, and learn and adjust to improve efficiency and effectiveness. Consistent and comprehensive evaluation of e-Government services will provide a better understanding of benefits and costs, identify drivers for success, provide auditable figures for transparency and enhance benefits realization.

The main objective of performance measurement in public organizations is to support better decision-making by management, leading to improved outcome for the

community, and to meet external accountability requirements. The term performance refers to output results and their outcomes obtained from processes, products, and services that permit evaluation and comparison relative to goals, standards, past results, and other organizations.

There are different performance measurement models to measure the e-Government initiatives and different studies differ in identifying the key factors and measurement indicator. Many of the existing e-Government measurement and benchmarking studies are based on different definitions of what is being measured.

Performance measurement framework helps organization to achieve improvement in all aspects of organization in order to achieve excellent results. It is an ongoing process of improvement because the needs of the community change continually, users' expectations change continuously and there are always ways in which the effectiveness and efficiency of an organization or partnership can improve (Commission for Architecture and the Built Environment, 2006).

Existing e-Government measurements are primarily one or more of the following (a) Input indicators (measure the resources countries have invested in e-Government), (b) Output indicators (measure the amount of e-Government applications realized), (c) Usage / Intensity indicators (measure the actual usage of e-Government by citizens / businesses), (d) Impact / Effect indicator (measure the impact e-Government such as changes in processing time or waiting time) and (e) Environmental / Readiness indicators (measure the countries readiness for the Information Society and its consequences).

e-Government systems are so complex that it is difficult for governments to determine adequate measures for evaluating the efficiency and effectiveness of the spending of their public money. The value of a government investment has to be measured not only by its direct return to government but also by its return to the people on whose behalf the investment is actually made.

The different motives and targets of the e-Government measurement and benchmarking studies result in different approaches to performance measurement. These studies differ in focus, in scope and in the type of measurement criteria used (input, output, usage, impact and environmental indicators). Traditional methods of measuring e-Government impact and resource usage fall short of the richness of data required for the effective evaluation of e-Government strategies. Performance measurement is tied into an organization's strategic planning process as a way of measuring the implementation of its goals and objectives derived from an organization's mission. Most of the current studies lack the measurement based on the Mission and Goals of the e-Government initiatives.

Appendixes

Appendix A

Performance Measurement Figures

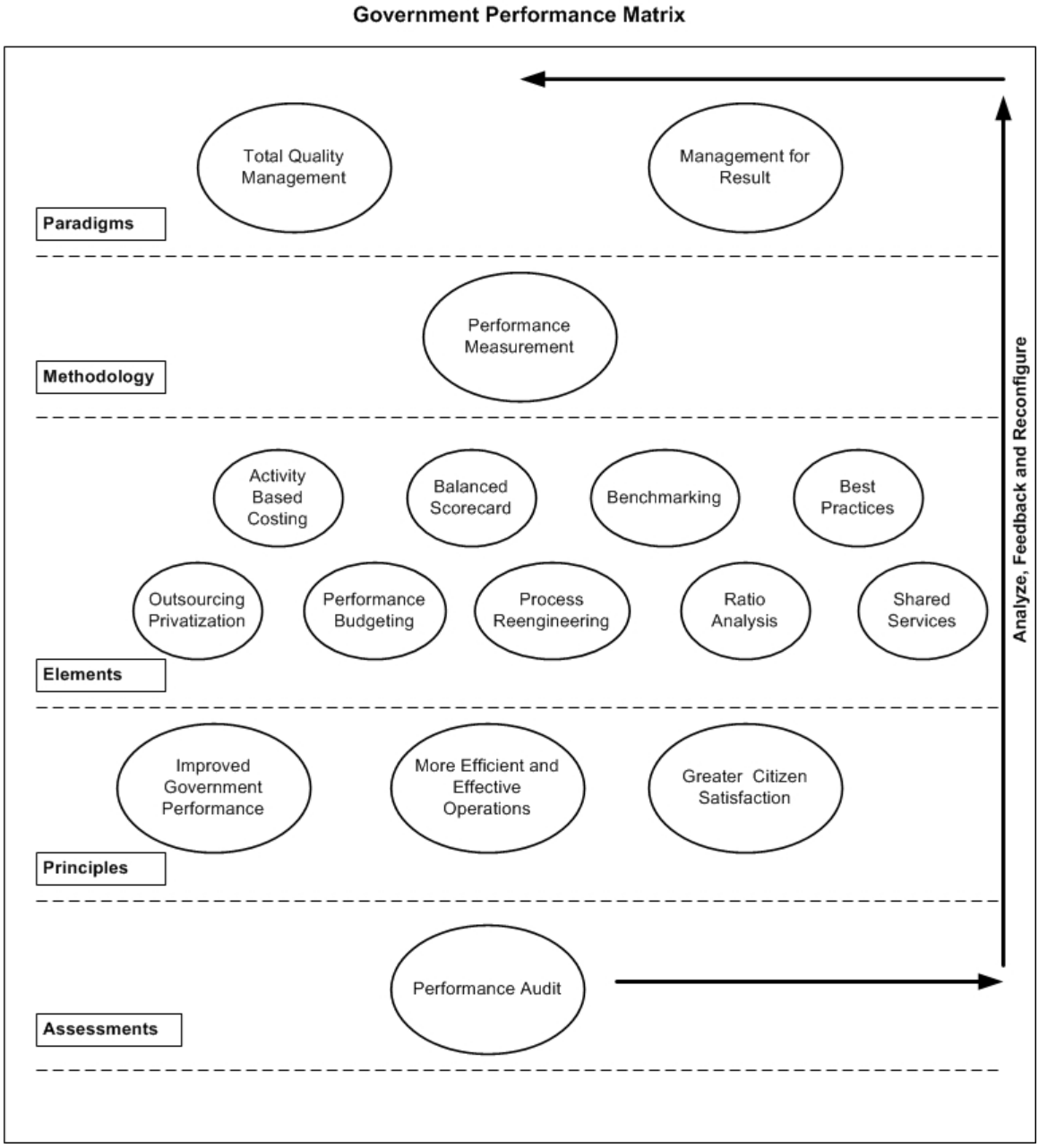

Figure 39. Government performance matrix (Foltin, 2005)

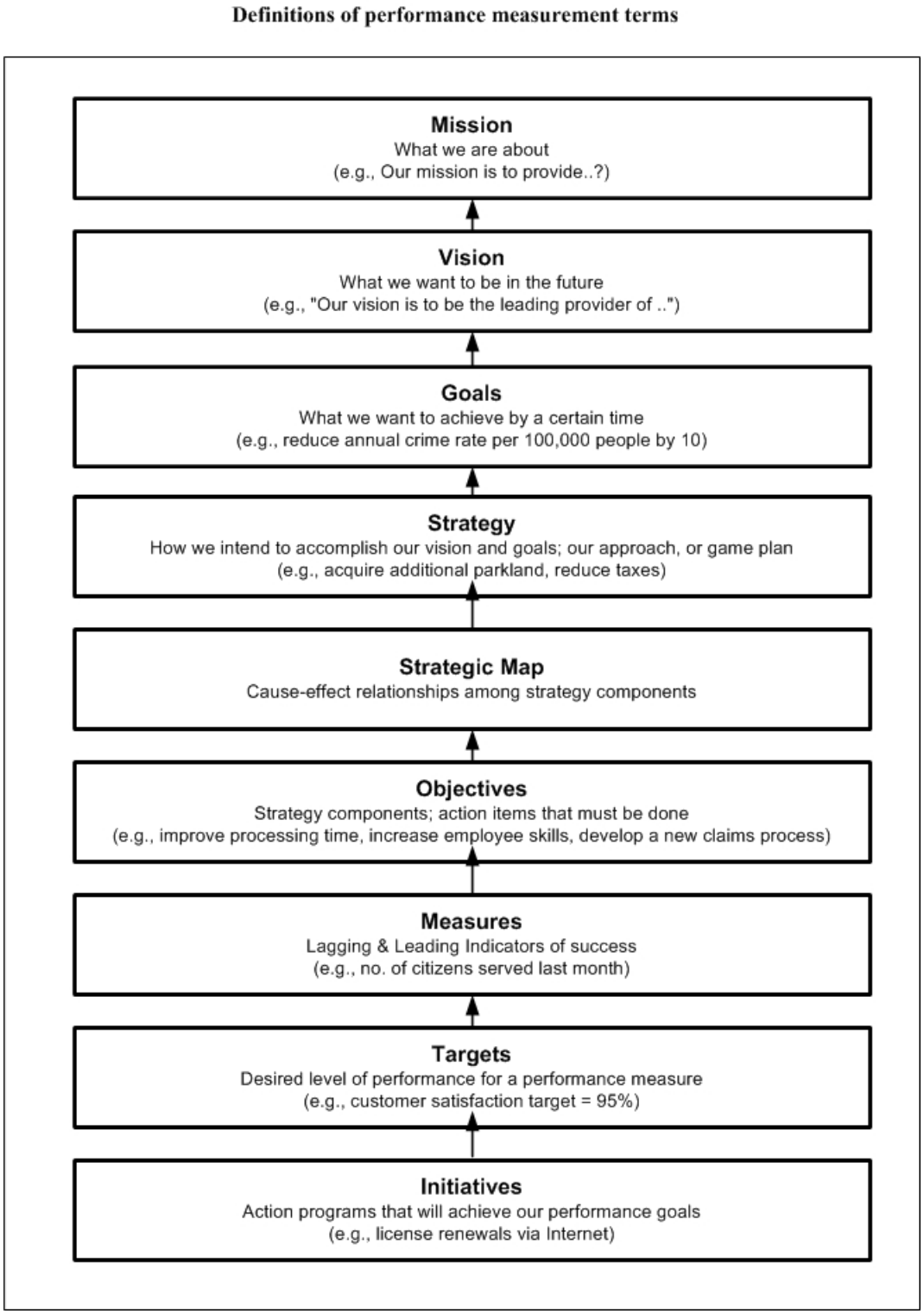

Figure 40. Definitions of performance measurement terms

Appendix B

Form for Certification of Authorship of Dissertation Work

Certification of Authorship of Dissertation Work

Submitted to (Advisor's Name): **Dr. Easwar Nyshadham, Ph.D**

Student's Name: **Willy C. Isaac**

Date of Submission: **Oct-30- 2007**

Purpose and Title of Submission: **Dissertation Report**

Certification of Authorship: I hereby certify that I am the author of this document and that any assistance I received in its preparation is fully acknowledged and disclosed in the document. I have also cited all sources from which I obtained data, ideas, or words that are copied directly or paraphrased in the document. Sources are properly credited according to accepted standards for professional publications. I also certify that this paper was prepared by me for this purpose.

Student's Signature: Willy C Isaac

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