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Developing a Framework for the Assessment of eGovernment Initiatives

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ABSTRACT

The area of e-government has received increased attention over the last few years. Much of this interest is derived from growth and development of electronic commerce. In spite of the current developments many avenues in the area of e-government remain unexplored. One such area encompasses the determination of the value derived from the implementation of e-government projects through comprehensive assessment. Assessment of Information Technology initiatives is conducted either as an ex-ante or ex-post procedure. In this study, we present an ex-post framework for the assessment of e-government projects. Assessment is defined in terms of identifying the value of the e-government project post implementation. We use the socio-technical model to create a three dimensional framework for the assessment of value of an e-government initiative. The three dimensions presented are e-government maturity level; stakeholders and assessment levels. Ultimately, this framework can be used as a tool locally, regionally and internationally to understand the true value that an e-government initiative presents to its constituents.

Keywords

eGovernment evaluation, assessment, stakeholder perspective.

INTRODUCTION

Political leaders around the world are increasingly commenting on the merits of online government. It involves moving the delivery of services to citizens from the physical to the online world, in order to capture the benefits offered by the eEconomy. While an increasing number of governmental units are incorporating or expanding the use of Information Technologies (IT) into many of their activities, little is known about the quality and efficiency of eGovernment initiatives. This is due in part to a lack of effective measures to evaluate eGovernment quality (Carbo 2004). Most of the studies focusing on the development of evaluation criteria have focused on the front-end perspective, i.e., the interface between public institutions and citizens – typically represented as the government's website.

At its core, eGovernment is about the changing nature of relationships from hierarchical command and control, to an interactive collaboration that the government has with citizens, businesses, public sector employees, and other governments. It is about opening the doors to multi-channel interaction and service delivery. Further, it is about having centralized, yet distributed operations to maximize efficiencies, productivity, and service delivery. Gartner (Baum et al. 2000) defines eGovernment as "the transformation of public sector internal and external relationships through net-enabled operations, information technology and communications, to optimize government service delivery, constituency participation and governance". eGovernment programmes will absorb a significant amount of public funds as they are implemented. It is essential therefore, that such a major undertaking should undergo post implementation evaluation.

Evaluating eGovernment has become an important issue in eGovernment initiatives (e.g. Lenk and Traummuller 2002, OECD 2003). The return on investment for eGovernment programmes should have many facets including internal efficiencies and savings, external improvements in customer service, and supporting national competitiveness. The lack of formal methods for monitoring and assessing eGovernment initiatives has led to a significant slowdown of eGovernment development in most countries (Kunstelj and Vintar 2004). Several reports and researches (e.g. commission of the European communities 2001, OECD 2003, Kunstelj and Vintar 2004) suggest that current approaches to monitoring evaluation and benchmarking eGovernment development don't support a comprehensive eGovernment assessment and need to be further improved in order to give policy makers evaluation elements for their decisions (Kunstelj and Vintar 2004). Thus, this paper emphasizes the need to be able to understand and analyze eGovernment initiatives through a proposed assessment framework.

BACKGROUND

E-government projects involve a wide range of services, products, people and procedures. One of the key components to understanding the value of e-government is to clearly identify the scope. Without a gauge on scope, it is possible for projects to go over budget, increase complexity and become unmanageable. Scope is also necessary to give a unit for assessment. The scope of e-government has been noted as follows (Heeks, 2001):

- e-administration – improving government processes by reducing costs, managing performance, making strategic connections within government, and creating empowerment.
- e-citizens and e-services – connecting citizens to government by communicating with citizens, supporting accountability by listening to citizens, supporting democracy, and improving public services.
- e-society – building interactions beyond the boundaries of government by working better with business, developing communities, building government partnerships, and building society.

The scope of e-government involves potentially overlapping components. For example e-society will at some levels involve participation from e-administrators. These are not mutually exclusive categories. They provide a basis for examination of the major players in the domain. We identify the major participants as the primary stakeholders in the e-government domain. A stakeholder represents any entity (individual, group or firm) that can affect or is affected by the organization's execution of its objectives (Porter 1985). The primary eGovernment stakeholders are:

- **Citizens:** Citizens in contact with public administration, using public services and also exercising their civil rights, participating in democratic processes.
- **Employees:** All categories of Civil servants. This will also include politicians and various other public administrators.
- **Businesses:** Both for-profit and non-profit companies interact with government. Businesses are in contact with public administration in their compliance with tax, social and legal obligations, and using dedicated public services. Many non-profits also seek and submit proposals for government grants.
- **Governments:** In multi-tier systems – there is interaction among local, state and federal levels.
- **IS/IT Personnel:** eGovernment solution suppliers mainly actors of the private sector – both large organisations and small providers – which are suppliers of solutions, know how, advice, skilled resources, hardware and software etc...
- **Special Interest Groups (SIGs):** Aggregated/organized citizens interacting in local communities to build their voice; as well as non-government organizations (NGOs) and civil service organizations (CSOs). Also included here are international organizations such as European commission, OECD and United Nations.

The main stakeholders are used for defining three types of relationships in eGovernment: G2C (Government to Citizens), G2B (Government to Businesses), and G2G (Governments to Governments). Our above classification adds two groups of stakeholders : IS/IT Personnel and SIGs to further extend the number of constituents that have an impact on e-government projects. Identifying the key stakeholders provides a basis for identifying scope of assessment.

eGovernment Maturity Model

eGovernment is an evolutionary path whose effective implementation requires a complete understanding of constituting elements and at the same time taking a holistic view to stay focused on its overall objectives (Safari et al. 2004). Lately, different models have been proposed to define eGovernment maturity stages. An eGovernment maturity model (eGMM) provides guidance on how to gain control of processes for developing and maintaining eGovernment services and how to evolve toward a culture of excellence in providing and managing eGovernment.

By focusing on a limited set of activities and working aggressively to achieve them, organizations can steadily improve eGovernment processes and enable continuous and lasting gains in their eGovernment capabilities. Accenture proposes a five-stage plateau model of eGovernment maturity: online presence, basic capability, service availability, maturity delivery, and service transformation. Some governments have also developed their own eGMM like Catalunya government (Spain) which is composed by five stages (Olivares 2005): publication of information, interaction, transaction, integration/collaboration, and transformation.

Riley(2001) outlines a three-stage model: e-Government, e-Governance and e-Democracy. In this model, governments move from net presence (e-Government), through to service provision and representative democracy (e-Governance), to a final stage of eDemocracy. Most of the eGMM suggest a linear progression to final maturity. Stamoulis et al (2001) offer an alternative suggesting governments and their agencies mature in various spaces rather than in distinct stages. Building on Angehm's (1997) work, they outline four spaces for a government revenue agency; Virtual Information Space, Virtual Communication Space, Virtual Transaction Space, Virtual Distribution Space (Stamoulis et al 2001).

Finally, other authors offer a mix of staged and space models (e.g Quirk 2000). Some authors have pointed out the need to differentiate between national eGovernment initiative models and local eGovernments (e.g. Shackleton et al. 2004). From all the various models presented above a set of three main phases emerge. We agree with the notion that the stages do not necessarily have to occur in a linear fashion. Our synthesis of the maturity models involves the following three phases: information presence – the government has an available website; interaction – two-way interaction with government and stakeholders and political participation – voting and activism.

VALUE CREATION AND ASSESSMENT

Value represents the worth, utility or importance of an entity. One classic model for determination of value is through Porter's value chain. Porter identifies both primary and secondary activities in the firm and using the economic view of value creation. If the product produced by the firm is differentiated, then there is added value to the customer, and ultimately an increase in the firm's revenue. Value is thus not only an avenue to increase revenue, but defines processes that reduce costs. In government, due to strict budgetary constraints, cost reductions are usually desirable. Governments operate within a particular budget to provide goods and services for the citizens that they service. Since governments do not have a solitary objective of revenue generation alternative strategies for assessing value need to be examined.

Technological innovation is the driving force for value creation (Schumpeter 1942). An innovation is defined as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption. It matters little, so far as human behavior is concerned, whether or not an idea is objectively new as measured by the lapse of time since its first use or discovery. The perceived newness of the idea for the individual determines his/her reaction to it. If the idea seems new to the individual, it is an innovation" (Rogers 1995). An innovation can occur in many different formats and can be considered as the source of value creation. Different innovations giving rise to different levels of value leads to various criteria for assessment.

For an e-business value is generated through 1. efficiency – speed, cost, economies of scale; 2. novelty – new structures, new participants, new transactions; 3. lock-in – networks, customization, trust and 4. complementary – products, services, technologies and activities (Amit and Zott 2001). These components represent both tangible and intangible constructs. Collectively, the different areas of value generation are aggregated to determine the overall value of the business. Value generated under any of the four categories can serve as a catalyst for value development in the other categories.

Prior to implementation of a project value can be assessed through a risk assessment. The cost of implementation is compared against the potential future benefits. In many instances however, a post implementation assessment is also necessary. The post implementation assessment of IT projects has occurred primarily from an economic perspective. Four constructs used to measure performance are: 1. revenue generated; 2. cost reduction; 3. asset return; 4. inventory turnover (Zhu 2004). However, value in and of itself consists of more than the examination of economic variables.

Measuring Value of eGovernment Initiatives

As Kunstenlj and Vintar (2004, p. 131) mention, "evaluation is vital to discovering the current state of eGovernment development, working out the extent to which objectives within various strategies and action plans have been reached, ascertaining strengths and weaknesses, shaping new guidelines, looking for examples of best practice and finally comparing different eGovernment organizations at the national and international levels".

Both China and Australia have implemented techniques to measure success of e-government projects. In Hong Kong, China, in order to measure the demand side, the e-government coordinating office commissioned an opinion survey to obtain users feedback on the design of government web sites and the provision of e-services. In Australia, the Australian Bureau of Statistics designed surveys to measure adoption of ICT in society as a whole. Some of the questions in the surveys were directed at measuring use of government online services, enabling them to measure the demand side for government. It also conducted a survey for measuring specific use of government web sites. The examples all had common elements in defining terms for measuring the success of e-government. Stowers (2004) have analyzed US states e-government strategic plans and she identified a set of performance measures for e-government divided in three main categories: inputs, outputs, activities. She

also selected some best practice jurisdictions based upon their record of performance measures and use of performance measurement methodologies. For these jurisdictions, interviews were conducted and documents were reviewed to develop the best practice case studies.

The European Union offers the eEurope Awards which includes three evaluation criteria: innovativeness and effective management, real practical results and impact, relevance and transferability. Experts have strengthened the importance of setting principles and measurable targets for G2G and G2C/G2B interactions. However, there appeared to be different approaches in determining success, and thus there are challenges for effective assessment.

The United Nations Global eGovernment Survey states that e-government measurements should: track national progress; identify disparities in access to ICT; move towards an inclusive information society; and support international comparisons. The 2003 survey focused on how willing and ready governments were to use e-government opportunities to improve services for their people. Within that framework, the Survey contributed to the development efforts of the member States by focusing on the question: is e-government contributing to the socioeconomic uplift of the people? The Survey provided a benchmark to gauge member States' comparative state of e-government readiness. The objectives of the Survey were to provide an appraisal of the use of e-government as a tool in the delivery of social services to the consumer and to provide a comparative assessment of the willingness and ability of governments to involve citizens in e-participation.

The Global e-Government Survey 2003 presented a comparative ranking of the countries of the world according to two primary indicators, (a) the state of e-readiness and (b) the extent of e-participation worldwide. The 2003 Survey showed that Governments had made rapid progress worldwide in embracing ICT technologies for e-government in the past years. In 2001, the Survey listed 143 member States as using the Internet in some capacity. By 2003, 91 per cent had a web site presence.

The Survey concluded that there were wide disparities between the "ehaves" and "e-have-nots". However, more importantly it showed that there was no standardized measure for evaluating the effectiveness of e-government initiatives. On a more optimistic note, the Survey showed that there can be significant benefits at both national and global levels if e-government tools are effectively applied.

However, it requires a re-examination of global and national frameworks that presently guide the political, economic, social and technological strategies underpinning e-government programmes worldwide. It was also suggested that measuring e-government performance should be broadened from e-readiness to also include e-maturity, that is, how to measure the outcome of e-government performance. Further, it was suggested that the Survey should be divided between developing and developed countries, with different methodology and criteria developed to make a fairer comparison as that might help to encourage countries in developing their eGovernment projects more effectively. Development of a regional eGovernment performance measurement system suitable for developing countries was suggested. That was supported by the meeting, with agreement that it would be useful to bifurcate some aspects of the measurements.

Although we see several initiatives for measuring eGovernment, according to Proudfoot (2003), "we have been measuring the progress of eGovernment in the most rudimentary fashion. Most cited studies are variations of the same methodology - benchmark governments against each other based on the online availability of a pre-determined 'baskets' of services and information. The nation states with the largest 'baskets' are declared eGovernment leaders". In summary, different approaches have been proposed for eGovernment initiatives. However, a comprehensive framework for government assessment has not been previously presented.

A FRAMEWORK FOR EGOVERNMENT INITIATIVES ASSESSMENT

We propose a framework for assessing eGovernment initiatives (see figure 1). The framework takes into account the eGovernment phases, eGovernment assessment dimensions, and the different stakeholders in eGovernment. The assessment is affected by the interrelation between these dimensions. We attempt to use the socio technical model (Leavitt 1964) and follow Lyttinen et al. (1999), model of ISD that incorporates four interdependent elements of (1) actors, (2) structure, (3) technology, and (4) task. We include the temporal dimension with the eGovernment maturity model. Next, we describe each eGovernment assessment dimension.

Technology dimension

IT infrastructure consists of sharable and reusable IT resources that provide a foundation for present and future business applications (Shang and Seddon 2002). The technological dimension focuses on aspects related eGovernment IT and on other related technical aspects, such as hardware and base software needs – broadly described as IT infrastructure. The main IT eGovernment issues are: integration, flexibility, adaptability and accessibility to users with different needs.

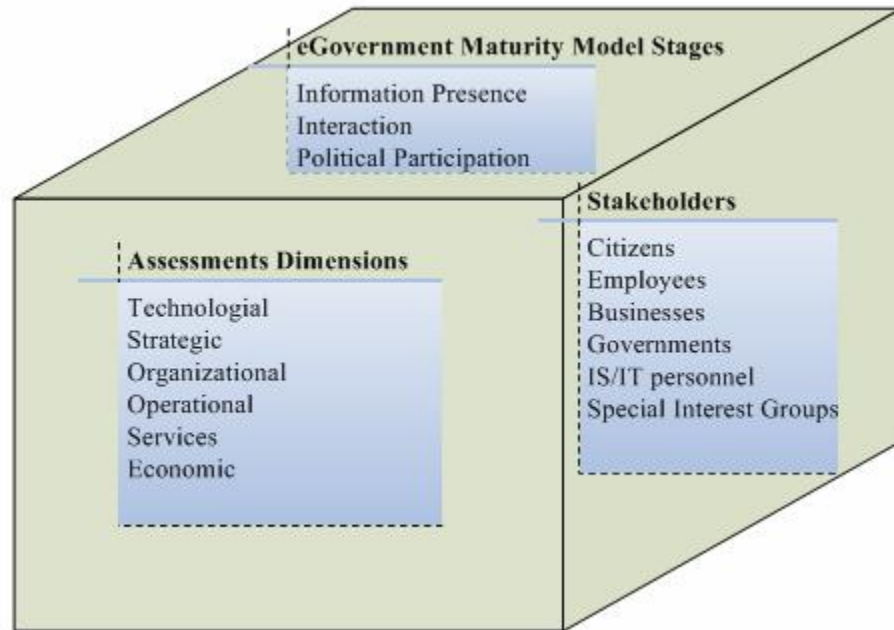


Figure 1. A framework for eGovernment initiatives assessment

Strategic dimension

The strategic dimension is related with core competencies accomplishing the organisation's mission and long-term goals. One important benefit which arises from the cross-cutting nature of eGovernment is the reduced scope for fraud. It is much more difficult for a fraudster to abuse the system when the citizen authorises public agencies to cross-reference the records. Some organizations have developed innovative practices to promote and increase the efficiency of eGovernment initiatives by offering new services and create new business areas. Some services examples are the French tax site (www.ir.dgi.minefi.gouv.fr), the Spanish revenue site (www.administracion.es). According to Accenture (2004), Sweden's Virtual customs office (www.tullverket.se) is perhaps the most innovative service in the custom area.

Organizational dimension

The organisational perspective is related with concerns like organisational structure and culture. The structure of an organization can support cohesion and learning within the company. Government services are expected to be socially inclusive. This means that all citizens who want to must have ready access to these services. It also means that all such citizens must have the ability to use the system and also feel confident using it. This presents enormous challenges to government as it implies ready access to computers and an adequate degree of ICT literacy. One of the most cited critical organizational issues is mass-customization: track the degree to which personalized services are provided to the individual citizen. Special focus needs to be considered for the impact of national and organizational cultures in eGovernment initiatives (Kovačić 2005) and how organizations are dealing with change management approaches to facilitate the adoption of eGovernment.

Operational dimension

Operational activities process day-to-day activities that involve acquiring and consuming resources. The activities are usually repeated periodically, such as daily, weekly and monthly. Information technology has a long history of use in cutting costs and raising output by automating basic, repetitive operations (Shang and Seddon 2002). Some operational issues that have been cited in the literature: functionality (ease of use) and improved citizen access, customer satisfaction; easy to navigate, clean in appearance, ability for the citizen to participate in online government, interact with government and affect policy.

Finally, more and more, the time saved for the citizen; ability to handle a complete transaction for service or business online and amount of information available has been proposed as an important assessment factor. Similarly, the efficiency or time saved internally to realize the operations by public administrations and employers.

Services dimension

Services - E-government services (eServices) need to be presented within a cohesive structure that is oriented towards the citizen and fits into the life events of the community. The transition from agency-oriented to citizen-centric e-government may be difficult and time consuming and will require leadership and coordination as agencies work towards a common and agreed architecture. Determining the value and justification of such a shift may be problematic, and individual agencies may need to adjust their normal program priorities and e-government spending to move towards this increasing integration. Countries like Ireland have defined the following services:

- **Information services** – This requires that all public service information is placed online through the websites of agencies and departments. Government generates huge volumes of information and not all of it is immediately accessible. The Internet and IT can bring this information together and allow for its publication.
- **Interactive services** – the delivery of public services online, enabling complete transactions to be conducted through the electronic channel. The key aspect of this phase is the interaction between the citizen and government. This may start with basic functions such as email contact information or feedback forms that allow for comments.
- **Integrated services** – the alignment of services and information around citizen needs in an integrated manner through a single point of contact with government.

Economic dimension

This dimension focus on the economic aspects related with eGovernment initiatives both investments and benefits obtained. Outcomes and benefits from e-government programs are not always measured in financial terms. Indeed, the majority of e-government programs are primarily focused on social outcomes. E-government programs are often intended to: improve access to service delivery and the quality of information, enhance the experience of interacting with government, reduce waiting times, and assist consumers and business. However, more and more, government have the pressure to justify their eGovernment investments. Economic and financial metrics include components such as: cost/benefit, Return on Investment (ROI), for e-government performance measurement, for improved decision-making and communication of programme and project priorities.

An important aspect of eGovernment initiatives is their sustainability. There is a danger that eGovernment projects are short-term. Benefits from such initiatives do not extend beyond the life of the project itself. Genuine change, therefore, is not achieved. Many schemes do not in themselves generate income and are dependent on external funding for continued existence. Projects might then, be seen to be financially sustainable if they are supported by an institution's core budget as opposed to short-term funding. This would act to embed the project in the 'core business' of the institution rather than being perceived as a marginalised, short term activity. Alternatively projects could be examined in terms of what remains beyond the initial funding period. Some projects, for example, although short-term, contribute to overcoming barriers to participation in the longer-term. This relates not only to changes in participants themselves, but also, and perhaps more importantly, to structures, attitudes and practices that have changed as a result of the scheme and which will be of benefit in the future. Table 1 summarizes the different eGovernment dimensions and their relevant components.

Dimension	Component
Operational	Functionality Efficiency
Strategic	Objectives Risk management Innovative practices
Organizational	Structure Culture
Economic	Return on investment Cost/benefits Sustainability
Technological	Flexibility Adaptability Accessibility Integration
Services	Information services Interactive services Integrated services

Table 1 – eGovernment assessment dimensions.

CONSIDERATIONS AND FURTHER WORK

This study attempts to define a framework for assessing eGovernment initiatives. The framework is based on the existent knowledge on eGovernment initiatives. This fact is very important since some organizations do not have this internal knowledge previously to these initiatives. Thus, one of the contributions of this study is bringing to attention issues related with eGovernment that require management, monitoring and control, yet may not normally be treated as important issues until they become critical. The framework will contribute to the improvement of accountability, definition of e-government strategies, motivation for adopting e-government initiatives, and improvement of communication.

The next step will be the development of an instrument to assess eGovernment initiatives. This instrument will take into account the 3d framework proposed. Then, further work is needed to test the validity of this framework. This will involve historical and longitudinal studies of eGovernment initiatives assessment process in different governments around the world.

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