Assessment Frameworks of E-Government Projects: a Comparison

P. Fitsilis1, L. Anthopoulos2, V. C. Gerogiannis3

1Department of Project Management, Technological Educational Institute of Larissa, Greece, fitsilis@teilar.gr
2Hellenic Ministry of Foreign Affairs, Greece, lanthopo@yahoo.com
3Department of Project Management, Technological Educational Institute of Larissa, Greece, gerogian@teilar.gr

Abstract

E-Government progress is being evaluated by multiple surveys using different methods, indexes and addressing different perspectives. In this paper, an overview of the assessment frameworks for e-Government software projects’ will be presented. All major assessment approaches - from European Commission, the United Nations, the World Bank etc. - will be analyzed and compared. As a result will emerge, the need for developing a multi-facet e-government project’s assessment framework, able to systematically analyze and evaluate the efficiency and the effectiveness of these projects.

Keywords: evaluation of information systems, e-government, project management.

1. Introduction

E-Government is defined as a continuous process of using Information and Communication Technologies (ICT) to serve citizens and improve their interaction with the state. ICT created new opportunities for changes, new information services, improved citizen satisfaction, etc. Governments worldwide have developed strategic plans for e-Government and ICT investments, such as the US Federal Government’s [1], the European Commission’s eEurope Strategic Plan [2], the UK’s Modernizing Government plan [3], the German Bund Online 2005 Strategic Plan [4] and the Canadian “Government on-Line (GOL)” [5]. All these strategic plans define common targets for e-Government, such as “time and cost savings for citizens and public agencies” [6] and “the development of a citizen centered, results oriented and market based public administration” [7]. Moreover, technological standards such as “openness, usability, customization and transparency for public portals” [8] and “interoperability between e-Government systems” [9] guide the implementation of e-Government projects. In Table 1, the common targets of representative strategic plans are presented.
Table 1. Common targets of major e-government strategies

<table>
<thead>
<tr>
<th>Strategic Plan</th>
<th>Primary Targets</th>
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| “Expanding e-Government” (US)  | i. Citizen centered, results-oriented, market-based Public Administration.  
ii. Federal and State Agencies. interconnected in a one-stop portal.  
iii. Guidelines and standards for all unique initiatives, performed by state or local Agencies.                                                                                       |
| “Modernizing Government” (UK)  | i. Knowledge economy revolution.  
ii. Transformation of Business, Government, People.  
iii. Citizen-focused Government.  
iv. Better services for citizens and businesses.  
vi. All key services available online by 2008.                                                                                                               |
| “Bund Online 2005” (Germany)   | i. Define and deliver online Federal Public services.  
ii. Client-orientation services.  
iii. Transparency and faster processing for federal services.  
iv. Quality and security of public services.                                                                                                                 |
| “eEurope 2005” (European Committee) | i. Citizen centered Public Administration.  
ii. Encourage participation.  
iii. 25 primary digital public services for all European member countries.  
iv. Multilingual one-stop shop.  
v. Telecommunication’s costs reduction.  
vi. Pan-European network of Public Administrations (IDA) of member-countries.                                                                               |

The implementation of an e-government strategy is actually done by multiple programmes and projects making investments on infrastructures (e.g. broadband networks and information systems); on software platforms (e.g. public portals, digital public services and back-office applications); on initiatives encouraging social participation (e.g. public access points, e-Democracy portals and campaigns). The evaluation of projects’ and programmes’ progress indirectly measures e-Government
progress and it is a difficult and complex procedure, due to projects’ variety and scope. However, evaluation is necessary since significant financial resources are being invested. The evaluation results are used to support the reviewing procedure of the strategic plans.

2. **E-Government Benchmarking**

E-Government benchmarking is currently based on surveys carried out at international, supranational and national levels. Surveys focus on the achievement of the targets of major e-Government strategic plans [10]. For the purposes of this paper, we present some important evaluation models that are used to measure e-Government progress.

The World Bank (www.worldbank.org) analyzes e-Government into five axes of precedence: a) Better Service Delivery to Citizens, b) Improved Services for Businesses, c) Empowerment through Information, d) Transparency and Anti-Corruption and e) Efficient Government Purchasing. World Bank surveys deliver useful data regarding e-Government, when combining Public Sector Governance [11] with ICT topics. World Bank surveys examine e-Government as part of countries’ e-strategies and evaluate the growth of public service offering from national e-Government portals (G2C, G2B, G2G), together with e-Government interventions (in process reform, IT standards, government networks, training, promotion and private financing). World Bank evaluates also, the existence of central government web portals, together with the percentage of basic public services available online, and with the most desirable digital public services. Moreover, government annual investments on ICT are measured, which can be combined to governance effectiveness.

The United Nations [12] provide an e-Government assessment model in order to evaluate countries’ migration to Connected Governance. Connected Governance is the UN vision for e-Government, where public administration efficiency and public service delivery will be established. Some major advantages with Connected Governance are considered to be, such as the avoidance of duplication; the reduction of operation costs; service transparency, efficiency and faster delivery; information sharing and security; citizen empowerment and participation etc. UN model contains indexes that measure existing e-Government approaches: e-Government readiness, e-service provision, e-service stages and e-participation indexes. The UN e-Government readiness index is a composite index comprising the web measure index, the telecommunication infrastructure index and the human capital index. Moreover, UN examines the maturity for the migration to Connected Governance with the following indexes: central initiatives, dynamic structure of portals, and the overall progress and performance. The first index measures whether the e-Government initiative is centrally defined and managed. The portals index evaluates government web sites for
their dynamic structure. The third index evaluates the affordability in infrastructure and network integration, the public administration transformation efforts (integration, service transformation and efficiency, service innovation, service delivery, document control, staff training) and the social networks existence.

The Information Society Directorate General investigates e-Government progress in Europe, by evaluating e-Europe 2003 and e-Europe 2005 targets with specific benchmarking methods [6]. The indexes used for e-Government progress evaluation [13] emphasized on the achievement of e-Europe political targets and on new member countries progress. The main metrics of e-Europe benchmarking deal with: a) internet indicators (internet access, usage and cost by citizens and enterprises), b) modern online public services (offering the 20 basic services defined by the Internal/Market/Consumer/Tourism Council, digital public service usage by individuals and enterprises, e-Learning and e-Health services), c) a dynamic e-business environment (e-commerce online transactions by individuals and enterprises, e-business readiness, use of ICT by business), d) a secure information infrastructure (security problems encountered by individuals and enterprises), e) broadband (penetration to households and enterprises). In e-Europe benchmarking reports [6], e-Government is considered as an integrated model that is evaluated with the following indexes: a) structural landscape (dealing with existing politics, society, demography and economy), b) readiness (meaning the existence of policies, funding and capability for e-Government), c) quality of service (examining the access channels for public services), d) back-office fulfilment (evaluating infrastructures, integration and process improvement), e) service adoption and use (by citizens and businesses) and f) service impact (regarding economic, social and democratic values).

E-Europe has been followed up by the i2010 policy framework for ICT (http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm). Information Society DG evaluates i2010 progress with a new benchmarking framework [14]. This framework uses indexes that evolved from e-Europe ones, and conform with i2010 priorities and guidelines: a) developments of broadband (coverage, usage, performance and prices, multiplatform services), b) advanced services (availability and usage of online services), c) security, d) impact (ICT sector growth, market transformation), e) investment in ICT research, f) adoption of ICT by businesses (basic connectivity, ICT and open source usage, e-commerce and e-business growth), g) impact of adoption of ICT by business (investments by business, individuals and government, productivity increase, employment and skills), h) inclusion (ICT use by households, public access points, accessibility, digital literacy), i) public services (e-Government availability and usage). The benchmark framework presented above, has many similarities to the e-Europe’s ones, and evaluates e-Government with multiple indexes, which examine government investments and readiness in Europe.

The Greek Information Society Observatory (www.observatory.gr) can be presented as a national evaluation model case. The observatory carries out multiple surveys,
using different perspectives to assess Information Society diffusion in Greece. Most of the analyzed perspectives conform to e-Europe benchmarking framework, since most initiatives in Greece are funded by the European Information Society Commission sources. The Greek Observatory evaluates e-Government with the following indexes [15]: a) number of public services available online (availability and sophistication), complying to e-Europe framework, b) individuals and enterprises transacting with Government online, c) number of digital public services with back office readiness, d) e-procurement services and e) public agencies using open source software. Moreover, the Greek Observatory examines the efficiency of ICT investments in public sector. The methodology [16] used for the investigation adopts international best practices and the Multiple Criteria Decision Making (MCDM) method. This study agrees that ICT investment in public sector is not always efficiency-driven, and, by that sense, the parameters that influence an investment decision must be analyzed (e.g. investments driven by a framework program). The study has investigated e-Government users (public servants, tax-payers, consumers and voters) and suggested three areas of efficiency in public sector: a) internal organizational and economic improvement, b) social implications of ICT investments (better services and chances for citizens and enterprises), c) external political implications (reliable and transparent public administration). The analyzed indexes concern the following axes of precedence [17]: a) direct economic benefits, b) indirect economic benefits, c) ICT contribution to quality of citizen life and d) ICT contribution to competitiveness. All these data resulted in the evaluation model [18] consisting of a) financial indexes, b) direct profit indexes, c) performance indexes, d) satisfaction indexes and e) staff training indexes.

The American Customer Satisfaction Index (ACSI) (www.theacsi.org) is one of the leading customer satisfaction indexes in the world developed by the National Quality Research Centre (NQRC) at the Stephen M. Ross Business School at the University of Michigan. The ACSI helps to determine how satisfied consumers in US are, so that consumer behaviour can be understood. The ACSI uses customer interviews as input to a multi-equation econometric model developed at the University of Michigan's Ross School of Business. The ACSI model is a cause-and-effect model with indexes for drivers of satisfaction on the left side (customer expectations, perceived quality, and perceived value), satisfaction (ACSI) in the centre, and outcomes of satisfaction on the right side (customer complaints and customer loyalty, including customer retention and price tolerance). ACSI personnel question around 80,000 Americans per year regarding how satisfied they feel about any products and services they may have used for that year. The satisfaction of the public with e-government services is rated by ACSI and concerns citizen satisfaction with US federal government websites (news & information, portals, search engines and digital public services). Citizen satisfaction shows how well e-government initiatives go, and how much traffic is
driven to the web channel. Latest surveys using the ACSI, show that investment in the online channel will pay itself off and result in increased efficiency and happy citizens.

Accenture [20] evaluates e-Government regarding the performance the public sector achieves from the citizen perspective. According to Accenture research, high performers in the public sector base the value they create on two criteria: a) the outcomes they deliver, meaning that they provide relentlessly citizen-centered services and b) the cost-effectiveness they achieve, meaning that they hold themselves accountable and they make their operations and results transparent to all. Moreover, Accenture [19] defines the notion of shared services in the public sector, as “the consolidation of administrative or support functions (such as human resources, finance, information technology and procurement) from several departments or agencies into a single, stand-alone organizational entity whose only mission is to provide services as efficiently and effectively as possible”. From shared services point of view, each public agency behaves as part of a larger system, and it works in open and collaborative ways. Accenture methods consist of quantitative and qualitative components, and both are applied over interviewing procedures carried out on public sector senior executives. The Quantitative method displays survey sizes such as the number of countries, public agencies and civil servants where the interviews are carried out. On the other hand the qualitative method traces the efficiency targets, and demands for improved services and cost pressures, which governments face.

3. E-Government Evaluation Frameworks

Recent studies give significant approaches to e-Government evaluation. They all take into account e-Government complexity and define different perspectives and methods of assessment. This section presents some of them, describing in short their strengths and weaknesses (Table 2). Wang and Liao [21] use the evaluation model of DeLone and McLean for assessing e-Government success, and they define an evaluation framework for measuring the success of Government-to-Citizen information systems. The primary purpose of the DeLone and McLean paper [22] was to synthesize previous research involving IS success into a more coherent body of knowledge and to provide guidance to future researchers. Although Wang and Liao framework is useful and provides a sound evaluation tool, is has weak points. Firstly, assessment data are collected from direct surveys, which make it difficult to implement, and secondly some important project management assessment dimensions (e.g. project organization and project processes) are not included in the framework.

Van Der Westhuizen and Edmond [23] provide an alternative approach, again based on DeLone and McLean evaluation model [22]: they include project and product dimensions for assessing e-Government projects, but they do not emphasize on the social or on the economic implications of e-Government projects. Moreover, the
proposed model does not associate the e-Government projects under evaluation with the applied organization or political strategy.

Bracilay [24] presents a framework for evaluating and measuring ICT project performance, which is not focused on e-Government area. The proposed framework uses balanced scoreboard methodology as an evaluation tool combined with other project management perspectives, as they are defined in SERVQUAL [25], and it is useful for single project assessment. However, it lacks in multi-project evaluation capability, especially in e-Government cases where strategy guides project design and implementation.

Victor et. al. [26] emphasize on the importance of post-completion project evaluation in e-Government. The authors consider that conclusions and information extracted from post-completion evaluation can provide useful information for the improvement of forthcoming projects. The proposed model is based on COBIT [27] and CMM [28] process maturity frameworks, but it does not consider existing major e-Government evaluation models presented in this paper. Additionally, the study does not define specific metrics and indexes for the evaluation model.

Liu et. al. [29] provide Key Performance Areas (KPAs) and Key Performance Indicators (KPIs) for different e-Government stakeholders. Their framework considers the e-Government strategy as an evaluation dimension and they examine project success according to strategic requirements. However, all evaluation dimensions of an e-Government model or framework must contain indexes and criteria affected by or concerning either the organizational or the national strategy, because e-Government projects have to align totally to strategic planning objectives and characteristics.

Esteves and Joseph [30] present an alternative assessment model of e-Government projects. Their model defines the assessment dimensions, which are related to the organization’s maturity and to the e-Government stakeholders. However, this model cannot be considered as an evaluation framework, since it does not provide specific measurement indexes and targets.

Finally, Batini et. al. [31] propose a framework for e-government project selection that is called GovQual. It is a multi-layered framework that measures project quality with respect to an organization’s environment (social context) and specific targets for service quality. However, this framework does not examine strategy and strategic targets for quality measurement.

All the above approaches are based on existing evaluation tools (e.g., SERVQUAL, Balanced Scoreboard, COBIT etc.) to provide evaluation frameworks for e-Government project progress, success and quality. The approaches focus on multiple e-Government stakeholders and on their different points of view for project quality. Moreover, the presented approaches recognize strategic goals as important parameters
for project evaluations, but only one of them [24] incorporates strategy in all evaluation dimensions [26]. Such an approach can be used as a project post-completion selection tool, giving the selection dimension in e-Government evaluation scope.

Table 2. E-government evaluation frameworks

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Approach</th>
<th>Key Findings</th>
</tr>
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<tbody>
<tr>
<td>Wang and Liao</td>
<td>Framework for evaluating G2C projects based on Delone-McLean model</td>
<td>- assessment data are collected from direct surveys&lt;br&gt;- project management evaluation dimensions such as project organization, processes are not included in the framework</td>
</tr>
<tr>
<td>Van Der Westhuizen and Edmond</td>
<td>Evaluation framework based on Delone-McLean model - project and product dimensions are included</td>
<td>- no social or economic implications of e-Government projects are considered</td>
</tr>
<tr>
<td>Braclay</td>
<td>Evaluation framework for ICT project performance</td>
<td>- it is ICT general and not focused on e-Government projects&lt;br&gt;- it uses a balanced scoreboard methodology&lt;br&gt;- it uses SERVQUAL project management perspectives&lt;br&gt;- useful for single project assessment&lt;br&gt;- lacks in multi-project evaluation capability</td>
</tr>
<tr>
<td>Victor, Panikar and Kanhere</td>
<td>Post completion evaluation model</td>
<td>- provides useful information for the improvement of forthcoming projects.&lt;br&gt;- based on COBIT and CMM process maturity frameworks&lt;br&gt;- it does not consider existing major e-Government evaluation models&lt;br&gt;- specific metrics and indexes are not defined</td>
</tr>
<tr>
<td>Liu, Derzs, Raus, and Kipp</td>
<td>Evaluation model defining KPAs and KPIs for e-Government stakeholders</td>
<td>- stakeholders dimension is very important in e-Government&lt;br&gt;- it contains a dimension for strategy&lt;br&gt;- indexes of all dimensions should be affected or measure strategy</td>
</tr>
<tr>
<td>Esteves and Joseph</td>
<td>Evaluation model</td>
<td>- it uses dimensions concerning organization’s maturity and stakeholders&lt;br&gt;- it does not define specific indexes or targets</td>
</tr>
<tr>
<td>Batini, Viscusi, and D. Cherubini</td>
<td>GOVQual e-Government project selection tool</td>
<td>- multi-layered framework&lt;br&gt;- associates project quality with social context&lt;br&gt;- it does not examine strategy</td>
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4. Conclusions

E-Government progress is being evaluated by multiple surveys, carried out by international and supranational organizations, national observatories and individual parties. All surveys evaluate e-Government progress using different methods, indexes and perspectives. E-government progress evaluation is a complex procedure, since e-government projects vary from infrastructural, to software and to political ones. In this paper, an evaluation of the most well known assessment frameworks for e-Government software projects’ was presented. From this study, it was made clear, that the existing models and frameworks assess either project results or project processes or customer satisfaction. It is evident that a holistic assessment framework that combines all these different aspects and facets is missing. An “ideal” e-government assessment framework should combine five different and concrete perspectives namely: project organization perspective, project processes perspective, project results perspective, social and economics perspective, citizen satisfaction perspective. We believe that the development of such a framework is mainly an exercise of measurement, simply because in order to evaluate, compare, predict and control effectively, measurements are required. Thus our current research efforts concentrate on the development of an “e-Government balanced scorecard”, able to measure the various facets of an e-Government software project. Such a framework can become a useful tool for every organization that plans to move to e-Government era, while it can deliver data to central benchmarking agencies, and to national and to supranational observatories.

References


