

## Chapter 34

# Systems Thinking to Improve E-Government Evaluation

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### ABSTRACT

*Worldwide there is increasing interest in both academic and government sectors to evaluate the different impacts of electronic government (e-government) systems. A number of predictive, cause-effect, linearly and functionally oriented models of evaluation have been proposed and applied. The focus of these models is to identify and quantify costs and benefits derived from successful e-government systems implementation and adoption. However the inclusion of different stakeholders in e-government evaluation remains marginal and limited to input information for the above models. This paper criticises existing evaluation models in two particular aspects: 1) the uncritical identification and quantification of different evaluation elements (aspects, costs, benefits or impacts, people to be involved in evaluation); and 2) the lack of reflection in relation to how evaluation information is used in managerial decision making. Criticisms regarding these aspects are drawn with the help of systems thinking, a body of knowledge which includes theories, ideas and methodologies for complex problem solving and whose use could enable critical surface and review of evaluation stakeholders' concerns about e-government. Strategies to make e-government evaluation practice more inclusive and critical in relation to stakeholders' concerns in their evaluation context are proposed and discussed.*

### INTRODUCTION

To many the use of information systems (IS) and communication technologies (ICTs) in public administration is equivalent to the term e-government (United Nations, 2010). This use aims to meet a variety of aims including increasing efficiency in public service delivery and enhancing citizens' participation in decision making (Ciborra, 2005; Dunleavy, Margetts, Bastow, & Tinkler, 2006; Henman, 2010). With the increasing popularity of e-government systems in different areas of administration (i.e. procurement, registrations, approvals, payments, benefits and voting) (Henman, 2010), there is an emerging interest in both academia and government sectors to evaluate the different impacts of these systems. A variety of

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predictive and cause-effect oriented models have been proposed in the literature and applied by public servants. Models stem from and have documented mainly in the fields of information systems (Farbey, Land, & Targett, 1999a; Farbey, Land, & Targett, 1999b; Irani & Love, 2001), e-government (Alshawhi & Alalwany, 2009; Chircu, 2008; Grimsley & Meehan, 2007; Gupta & Jana, 2003; Irani, Love, & Jones, 2008; Papadomichelaki & Mentzas, 2012; Venkatesh, Chan, & Thong, 2012) and public sector management (Gil-Garcia & Martinez-Moyano, 2007; Northcott & Taulapapa, 2012; Schachter, 1994).

There is a plethora of possibilities to facilitate e-government evaluation. Examples of these models include Layne and Lee' stages of e-government maturity (Andersen & Henriksen, 2006; Layne & Lee, 2001); Delone and McLean IS success model (DeLone & McLean, 1992); technology acceptance model (TAM) (Davis, Bagozzi, & Warshaw, 1989) and its updated versions (Venkatesh, Morris, Davis, & Davis, 2003); and (e-government) service quality (SERVQUAL) (Connolly, Bannister, & Kearney, 2010; Papadomichelaki & Mentzas, 2012). Recently, there is interest to build evaluation models to capitalise on experiences of previous ones and privilege citizens' satisfaction with services as a key goal and make evaluation a standard and transferable practice (Osman et al., 2014)

Using these models, evaluation involves the measurement of technical and non-technical aspects related to the implementation as well as the adoption of e-government systems by their users. Measurement relies on 'hard' aspects (i.e. systems performance) as well as 'soft aspects' that include among others public servants and citizens' perceptions about benefits being accrued by the use of these systems (i.e. cost-savings, time efficiencies, quality of information, satisfaction), problems, risks and opportunities (Gupta & Jana, 2003; Irani et al., 2008). Despite models considering different dimensions of e-government, a common, dominant and unchallenged feature of many of them is the use of quantifiable, cause-effect, linearly oriented and functional perspectives assumptions that aim to validate the achievement of specific goals that are defined uncritically by policy makers or administrators. The lack of critical review of these assumptions results in a limited degree of participation of different e-government stakeholders that is confined to the provision of specific information and that is at risk of undermining the very purpose of e-government as a citizen-centred tool to enhance accountability, economic competitiveness and democracy in societies (Heeks, 2006; Heichlinger, 2004).

To this situation, a pertinent research question to ask is: How can e-government evaluation be more inclusive of stakeholders, in particular of citizens and public servants, whilst still providing room for critical reflection? To address this question this paper criticises the logic underlying many of the existing e-government evaluation in two aspects: 1) the uncritical identification and quantification of different evaluation elements (aspects, costs, benefits or impacts, people to be involved in evaluation); and 2) the lack of reflection in relation to how evaluation information is used in managerial decision making. It is found that in practice these aspects require further thinking and review by different e-government stakeholders. The criticisms are addressed in the light of systems thinking, a body of knowledge that enables stakeholders' surfacing and addressing of issues of concern about complex situations (Córdoba-Pachón, 2010; Jackson, 2003; Midgley, 2000). With systems thinking, specific strategies to make e-government evaluation more inclusive of e-government stakeholders and their concerns are proposed. These strategies should be seen complementary to the use of evaluation models and intend to encourage public administrators, policy makers and researchers among others to improve their understandings as well as their practice of e-government evaluation.

The paper is organized as follows. E-government is presented as a phenomenon in need of being critically reviewed, in particular in terms of its evaluation. Two types of e-government evaluation models are elicited. Their underlying logic is criticised in terms of two aspects namely: 1) the uncritical identi-

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