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Interdisciplinary application of structuration theory for e-government: A case study of an IT-enabled budget reform

Gabriel Puron-Cid *

Centro de Investigación y Docencias Económicas, A.C., Circuito Tecnopolo Norte s/n, Colonia Hacienda Nueva, Pocitos, 20313 Aguascalientes, Ags, Mexico

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ABSTRACT

e-Government projects might fail when neglecting their multidisciplinary, complex and unstructured reality. Interdisciplinary interaction of actors and integration of multiple structures during e-government adoption have made difficult for both practitioners in practice and scholars in theory. Different structuration theory (ST) models have contributed to understand this phenomenon. This article proposed an interdisciplinary structuration theory (IST) by integrating relevant structures based on a better understanding of the interacting disciplines of the e-government initiative. The IST has advantages over other models because it provides a detailed description of the case; integrates relevant structures and multiple actors' views; incorporates an alternative methodological bracketing of practices; and operationalizes the discursive consciousness. This study examines the model by using the case of an IT-enabled budget reform in Mexico as a contemporary case of e-government. An embedded case study design was employed using interviews of actors and analysis of official documents. Results show a broader set of interacting structures not just technology that were possible to identify and examine by considering other disciplines. Only a subset of formal practices prescribed for systems and policy was effectively adopted while new informal practices were enacted. Among all, practices of collaboration, knowledge and trust were the most critical practices in the case. Several outcomes of interaction were identified. From these findings, practical recommendations are advised in the modalities of communication, power, and sanction.

1. Introduction

Many governments have adopted e-government initiatives to achieve different and sometimes competing goals: cost-savings, efficiency, better public services, accountability, communication with stakeholders, and other internal management benefits (Clemons, Reddi, & Row, 1993; Gant, 2004; Gil-Garcia, 2005; OECD, 2003). In times of financial crises and the needs for cost savings, "doing more with less" by using technology has been the trite slogan. However in practice, e-government projects might fail because of the multidisciplinary, complex and unstructured ways these initiatives are presented in reality making integration and interdisciplinary interaction difficult in practice and in theory (Heeks, 2006; Scholl, 2009; Van Veenstra, Janssen, & Tan, 2010).

Structuration theory (ST) has been used to build more integrated frameworks including different structures and actors involved in e-government and information systems (Basettihalli, Kim, Lee, & Noh, 2010; DeSanctis & Poole, 1994; Orlikowski, 2000; Walsham & Han, 1993). These efforts contribute to our understanding of e-government mechanisms of success and failure, but neglect other interacting structures and actors involved in the phenomenon from other fields (Jones & Karsten, 2008; Puron-Cid, 2010). e-Government initiatives are not adopted information technologies exclusively. e-Government projects are usually comprehensive sets of technological, organizational, administrative, and process innovations with applications in various areas of government such as accounting, security, education, health, and service delivery, to name a few. However, existing ST frameworks have placed the technological component at the heart of the structuration process and specifying everything else in compounded contextual or organizational characteristics. Giddens makes no emphasis on what structures supersede others; nor does he specify a way to extend his theory in a particular field like e-government that is characterized with multiple interactions between disciplines in practice. Therefore, the purpose of this article is to develop an application to study e-government from an interdisciplinary perspective. Depending on the type of e-government, relevant structures interacting in this projects detected by other disciplines and fields need to be considered in e-government practice and consequently in theory. Therefore, an interdisciplinary theoretical framework of ST that better serves to understand the multiple structures interacting in e-government, but detected from other disciplines different than information systems, is needed (Puron-Cid, 2010; Van Veenstra et al., 2010). This paper develops an application of ST to study e-government from an interdisciplinary perspective (now referred as interdisciplinary structuration theory—IST).

In the field of e-government, ST applications have proofed several advantages (Basettihalli et al., 2010; Seal, 2003; Van Veenstra et al.,

* Fax: (5255) 5727-9873.
E-mail address: gabriel.puron@cide.edu.

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2010; Walsham & Han, 1993): develop detailed descriptions of a case; describe and integrate the multiple structures involved; incorporate perspectives from different actors; identify practices as facilitators or inhibitors of adoption; and understand continuity or transformation in social structures. The IST contributes with the existing ST analysis by integrating relevant structures from other disciplines according to the type of e-government initiative and the context in which this initiative is implemented. The complement of the IST provides a more solid interdisciplinary framework for ST. By using the IST model, this study examines the adoption in practice of an IT-enabled budget reform in Mexico as a contemporary case of e-government initiative. Since the late 1980s, Mexican government has reformed its budget system involving new information systems and managerial techniques. The last of these reforms, known as PbR-SED for its Spanish abbreviation of "Budgeting based on Results-Performance Evaluation System", was recently designed and enacted in 2008 and its purpose is to transform the way agencies spend public resources based on results and cost savings. The PbR-SED represents an ongoing and complex transformation and is expected to condense the components of the IST model. Two reformer agencies and three implementer agencies were analyzed to understand the intended transformation on public administration and the uneven level of adoption. The structure of the paper contains six sections including these introductory comments. The second section presents the IST framework. The third section details research methods. The fourth section discusses the case of the IT-enabled budget reform in Mexico. A summary of results and discussion is provided in the fifth section. The sixth section draws some conclusions. Finally, some practical recommendations are provided in the seventh section drawn from the study's main findings.

2. Interdisciplinary structuration theory (IST)

ST is a general social theory that has been used in many different disciplines and research fields.[1] However, the multiple uses and applications of ST have been departmentalized according to the scholars' disciplinary traditions and focus (Bryant & Jary, 2001). Jones and Karsten (2008: p. 128) indicate variation on these applications because of the different disciplinary lenses and the lack of advice from the original Giddens' framework.[2] This paper considers that these differences of ST applications across disciplines obey the attention that each discipline pays on a particular set of structures, neglecting other critical structures that were detected from other disciplinary perspectives but that certainly interact in the reality of e-government adoption.

e-Government adoption is not in vacuum. The structures involved in these types of projects depend on the type of initiative and the context in which they are embedded. The approach then is to consider the nature of e-government project to subsequently analyze the multiple structures involved. The purpose of this study is to return the contextual nature of the ST frameworks for the study e-government by taking an interdisciplinary perspective that occurs naturally in practice, but that needs to be built consequently in theory. This paper develops an application of ST for the field of e-government, named the interdisciplinary structuration theory (IST), with the purpose of: developing a detailed description of a case; integrating multiple and relevant structures, incorporating multiple perspectives from different actors using a different methodological bracketing between reformer and implementer standpoints; operationalizing the concepts of the original ST framework including the stratification model; and, providing solid basis for interdisciplinary framework for the structuration process. The differences between the existing ST frameworks and the proposed IST framework are not in the applications of the concepts that traditionally characterized this theory. The main differences between these models come from the sources of knowledge in which these components were developed: mainly from information systems and organizational studies literature (see summary of differences in Table 1). The main differences are in terms of the interdisciplinary scope of the IST, but other differences derived from the bracketing between formal and informal practices, structures, modes, and dimensions. Another distinguished variation is that the IST operationalized reflexive monitoring and rationalization components of the stratification model, while existing ST models only recognize them as individual properties.

As in the ST framework, the IST model characterizes *social systems* as constituted by *human agency* through daily *practices*, and yet at the same time these practices are the media of the constitution of *structures* (Giddens, 1979, p. 5). This is what is meant by *duality of structure*. Structures are sets of "rules and resources, organised as properties of social systems" (Giddens, 1979, p. 66). *Human agents* are "knowledgeable and capable agents who reflexively monitor their action" (Bryant & Jary, 2001, p. 12). *Structuration* is a continuous process involving the "conditions governing the continuity or transformation of structures, and therefore the reproduction of systems [enacted by human agents]" (Giddens, 1979, p. 66). Social systems are sets of *properties* that human agents adopt in daily practice in the form of rules and resources in three *modes*: *signification*,

Table 1
Differences between existing ST models and proposed IST model.
Source: Own preparation.

	Existing ST models	Proposed IST model
Social systems	Constituted by human agency while adopting technology	Constituted by human agency while adopting technology in a particular context.
Practice	Medium of this constitution: design practices and user practices.	Medium of this constitution: formal practices and informal practices.
Human agents	Designers and users	Reformers: designers, top executives, project leaders, reformer agencies, etc. Implementers: users, managers, budgeters, planners, implementer agencies, etc.
Structures	Structures found relevant in information systems adoption	Structures found relevant in information systems adoption situated in a particular context. Other pertinent structures found relevant in other disciplines may be added.
Structuration	Methodological bracketing between designer and user' practices	Methodological bracketing between reformer and implementer' practices.
Modes	Signification, domination, and legitimation	Signification, domination, and legitimation.
Dimensions	Communication, power, and sanction	Communication, power, and sanction.
Stratification model	Recognized, but not included in corresponding frameworks	Operationalized in terms of individual properties of reflexive monitoring (trust) and rationalization (knowledge). Motivation was not included for difficulties of observation.
Perspective	Information systems or organizational perspectives	Interdisciplinary perspectives depending on the type of e-government initiative and context.

[1] There are ST applications used in the fields of accounting and budgeting (MacIntosh & Scapens, 1990; Scapens & MacIntosh, 1996), information systems (Orlikowski, 1992, 2000), and inter-organizational studies (Sydow & Windeler, 1998). Other ST applications have been used to study particular phenomena or areas like budget reforms (Van Reeth, 2002), advanced technology use (DeSanctis & Poole, 1994), and e-government (Basettihalli et al., 2010; Seal, 2003; Van Veenstra et al., 2010; Walsham & Han, 1993).

[2] For example, in some ST applications, the analysis starts on conditions of human action (Walsham & Han, 1993), while others begin on influences from social structures (Orlikowski, 1992; Van Reeth, 2002). Some models conceptualize social structure as "embodied" in artifacts (i.e. technology or budget) (DeSanctis & Poole, 1994; Van Reeth, 2002), while others, social structures are "enacted" in practice by human agents (Orlikowski, 2000). There are also different epistemological and methodological designs. Recent applications of Adapted Structuration Theory are positivist while other applications are interpretivist (Jones & Karsten, 2008, pp. 141–142).