

RETHINKING E-GOVERNMENT PERFORMANCE ASSESSMENT FROM A CITIZEN PERSPECTIVE

ALEXANDRE FERNANDES BARBOSA, MARLEI POZZEBON AND EDUARDO
HENRIQUE DINIZ

The use of information and communication technology (ICT), particularly that related to the consolidation of the internet as a social and business networking medium, has impelled governments towards enabling e-government (e-gov) programs to transform the future of the delivery of public services. E-gov has a clear economic, social, and political impact that should be monitored in order to steer the design of effective public policies. In this article, we argue that evaluating the impact of e-gov entails a complex process of e-gov performance assessment that should take into account the perspective of citizens. Supported by a framework that combines two theoretical views, namely the structurationist view of technology and the social shaping of technology, we propose a model that consolidates nine performance dimensions. This model is the result of empirical work based on an in-depth analysis of interviews with relevant social groups regarding their perceptions of the technological artefacts of e-gov.

INTRODUCTION

The challenge of promoting economically and socially sustainable development in a highly complex and rapidly changing environment has led governments around the world to rethink their public management models, political administrative structures, and governance mechanisms (Barzelay 2000; Heeks 2002). In the context of public administration, governance is related to increasing government capacity by putting certain management principles into practice. These principles are meant to steer the actions of the state, focusing on citizens and emphasizing performance enhancement through control mechanisms. Reform and modernization of the state have become priorities on the political agenda of governments, including issues such as efficiency, effectiveness, transparency, quality of public services, accountability, and democratic participation.

The wave of initiatives to reform the state and modernize public administration that has swept across many countries was motivated by the New Public Management (NPM) principles (Andrews *et al.* 2005; Barzelay 2000). This movement was based on result-oriented management principles designed to impel public administration towards effectiveness, governance, and market practices, and sought integration of critical organizational components, including information and communication technology (ICT) (Heeks 2002). NPM may be understood as the convergence of principles that arise from public choice theory, which uses a model of economic analysis to assess politics, and management theory, which is based on a concept of management that is focused on results, performance, productivity, and citizen-centric management practices.

The use of ICT in transforming internal governmental processes, modernizing management, and providing better public services has played an essential role in shifting the paradigm of efficiency and performance in the public sector (Fountain 2001; Pavlichev and Garson 2004). Acknowledgement of the potential of ICT to support a transformation in the delivery of public service has led to a substantial increase in its use (Heeks

Alexandre Fernandes Barbosa is at the Brazilian Network Information Center, CETIC.br, São Paulo, Brazil. Marlei Pozzebon is in the Department of International Affairs, HEC Montreal, Quebec, Canada. Eduardo Henrique Diniz is in the Department of IT and Quantitative Methods, FGV-EAESP, São Paulo, Brazil.

2002), enabling public sector reforms (Fountain 2001; Heeks 2002; Holmes 2002). Digital media, particularly the internet, have had a tremendous impact in changing the public service provisioning process (Eggers 2005; Tapscott and Williams 2006). Moreover, the technological development of internet and Web 2.0 tools has given rise to the discussion regarding networked co-production of public services based on digital media (Bovaird 2007; Brandsen and Pestoff 2006; Meijer 2011). Digital media and social network communities have great potential for transforming the traditional government-centric approach to public service delivery into a citizen-centric view.

According to a number of authors, e-gov may refer to various aspects of the use of ICT in the public sector designed to enhance the performance and effectiveness of public administration and services. Nevertheless, there is a convergent understanding that the inclusion of digital media as part of e-gov initiatives is enabling governments to interact with citizens and enterprises in order to provide electronic public services (Meijer 2011). The factors that promote e-gov development go beyond the forces that arise from the public administration reform itself and comprise the increasing use of technology by citizens and enterprises, the preference for online transactions in virtual environments, and the universalization of Web 2.0 applications.

E-gov affects all government instances and functions and focuses on the needs of citizens (Pavlichev and Garson 2004), thus becoming an essential factor in the process of changing the efficiency paradigm of the public sector and promoting more efficient and less costly processes. Although e-gov performance should be assessed from internal (government) and external (society) perspectives (Niven 2003; Schedler *et al.* 2004), most existing models focus primarily on the internal government perspective.

The concept of a citizen-centric approach to the delivery of e-gov services places citizens at the centre of the dynamics of internal and external processes and requires that ICT be used to provide public integrated services across governmental agencies. Although this concept is pivotal, there is a lack of management instruments to help public organizations assess e-gov performance from the perspective of citizens. As a result, performance is often limited to assessing operational, financial, and administrative efficiency, whereas it should also take into account the social and political impact of e-gov on society. Performance measurement that takes into consideration social dimensions would require specific models and indicators to account for the perceptions and socio-cultural aspects present in the lives of citizens (Avgerou *et al.* 2004). E-gov performance assessment models should be robust enough to help public managers to evaluate whether the objectives proposed in strategic plans and public policies are being attained (Klitgaard and Light 2005). The lack of performance assessment models and indicators built from the perspective of citizens prevents public managers from measuring the social impact of e-gov initiatives.

This empirical study focuses on the performance dimensions of e-gov and the following question was formulated to guide the research: 'Which dimensions must be incorporated into electronic government performance assessment models in order to strengthen the perspective of citizens/users of electronic public services?' The empirical research consists of a qualitative case study of the e-gov program implemented by the São Paulo City Council and employs a theoretical framework based on key concepts from the structurationist view of technology and the theory of social shaping of technology. The assumption that e-gov is socially constructed by the social actors that use it has led to the adoption of the interpretive paradigm as the epistemological position of the authors.

The following section draws from the literature to establish some of the key concepts necessary to understand e-gov implementation and performance assessment. The conceptual framework based on a social constructivist theoretical perspective is discussed in the third section. The research method, including the process of data collection and data analysis, is described in the fourth section. The results are discussed in the fifth section, and the sixth section concludes.

BACKGROUND AND LITERATURE REVIEW

E-government and modernization of public administration

The continuous pressure to enhance performance, which has been experienced by the private sector, has also made its mark on the public sector. The idea of transforming governments into high-performing organizations, as discussed by Klitgaard and Light (2005), requires the revitalization of governments and the reinvention of public management models. Fountain (2001) and Heeks (2002) postulate that e-gov is at the centre of the contemporary discussion on the modernization of public administration. Meijer (2011) argues that internet technologies have the potential to reorder relations between government and citizens. Schedler and Felix (2000) argue that government activities require legitimization from citizens, and Pestoff (2006) claims that government legitimacy can be strengthened by the strategic use of digital media and communication mechanisms using ICT-based mediation between citizens and public administration.

The massive adoption of ICT was one of the main instruments used in the transformation of management models and governance structures in the private sector (Fountain 2001). Adapting models from the private to the public sector to promote increased government efficiency was one of the main goals of the NPM in many countries (Barzelay 2001; Ferli *et al.* 1996). The same movement took place in Brazilian public administration, where a managerial reform based on NPM principles was important to guarantee greater flexibility and administrative efficiency in activities carried out by public organizations (Bresser-Pereira 2010).

The use of ICT to revitalize and modernize government is recognized as a central theme, not only for management models based on NPM, but also for further developments that incorporate broader issues, such as the networked co-production of public services (Bovaird 2007; Meijer 2011), accountability, and social control.

The scope of e-government and types of relationship

E-gov programs can cover three different areas: e-public services, e-public administration, and e-democracy (Pavlichev and Garson 2004; Schedler *et al.* 2004). Although e-gov is not restricted to the availability of online public services on the internet (Abramson and Means 2001), e-public services have become the most popular and prominent dimension of e-gov and also the dimension that has the most impact on society (Abramson and Means 2001; Tapscott and Williams 2006). In spite of e-public services only representing a subset of e-gov, they are extremely relevant to the institutionalization of the internet as a new public service access and delivery channel (Lenk and Traunmüller 2002); that is, they have been rapidly changing citizens' perceptions of the quality of the services provided (Fountain 2001; Tapscott and Williams 2006). For the purpose of this research, the scope of performance assessment is limited to the e-public services dimension. In addition, because we are particularly interested in 'external' e-gov relationships, the empirical investigation was limited to government to citizens (G2C) and government to businesses (G2B) relationships.

Performance assessment models for e-government

As citizens are demanding better services, more efficiency, and accountability from public managers, performance measurement is perceived as a mechanism to achieve improved accountability to citizens (Marr 2009). Performance assessment has become essential in public administration, thus challenging administrators to determine the appropriate performance dimensions from which effective indicators should be created to enable accurate assessment (Behn 2003; Heeks 2002). The challenge becomes even greater when assessment models are criticized for their lack of institutional fit, and for basing their assessment of whether the organization is moving towards its strategic objectives solely on the financial perspective. This is the case for most existing government-centric performance assessment models that focus on financial efficiency, and ignore other dimensions such as the political and social ones. Several authors acknowledge the need for organizations to monitor multiple performance dimensions other than the financial, including the perspective of customers, ethics, sustainability, innovation and learning, internal processes, and even aesthetics (Fitzgerald *et al.* 1991; Kaplan and Norton 1997; Niven 2003). Organizations need to increasingly assess and articulate their performance from broader perspectives (Popovich 1998) due to the fact that citizens assess public administration from multiple dimensions according to their individual expectations. Besides, the existing performance models do not take this multiplicity into consideration (Klitgaard and Light 2005).

Creating high-performance public organizations based on e-gov requires developing assessment tools capable of assessing the perception of stakeholders on how e-gov has been performing (Popovich 1998). In the context of e-gov, citizens are important stakeholders. Therefore, taking their socio-cultural complexity into account is fundamental, and specific indicators must be developed to incorporate the perception of citizens into performance models.

Existing performance assessment models

Performance in the public sector is a multifaceted concept, given that governmental agencies are often confronted with conflicting demands from heterogeneous social groups and their measurement is, in some sense, subjective (Brewer 2006). Considering public services in general, current literature on citizen-centric assessment is mainly focused on measuring satisfaction with public services (Behn 2003; Holzer and Kloby 2005; Van Ryzin 2004, 2006). The literature also provides the important argument that citizen inclusion in measuring government performance is of paramount importance to better inform policy makers about the social context of citizens.

NPM can be considered a relevant movement that has given a stronger performance orientation to the public sector. Schedler and Summermatter (2007) argue that to have a citizen-centric approach when offering public services is one of the principal claims of modern public management. These authors also claim that literature on performance assessment has used the notion of customer orientation as a metaphor to emphasize the need for more comprehensive performance models that take into consideration the needs of citizens. The customer orientation metaphor has guided researchers such as those employing the American Customer Satisfaction Index model to analyze customer satisfaction (Freed 2003; Van Ryzin *et al.* 2004). Other e-gov customer-oriented assessment models, or citizen-as-customer models, are discussed by Schedler and Felix (2000), Wimmer and Holler (2003), Steyaert (2004), Callahan and Gilbert (2005), Kelly (2005), and Schedler and Summermatter (2007).

Considering e-gov services in particular, the available literature on performance assessment uses existing analytical models from the business management literature to create specific performance assessment models (Niven 2003; Schedler *et al.* 2004). One of the most widely known is the Balanced Scorecard (BSC) model, which is defined as a performance assessment model aimed at translating business vision and strategies into performance goals and metrics from four different perspectives: financial, customers, internal processes and operations, and innovation and learning. This model was proposed by Kaplan and Norton (1997) to complement traditional models that incorporate only the financial perspective.

Within the scope of public management, assessment and control processes are expected to enable governmental agencies to assess performance through specific metrics which, in turn, are able to translate the success of their actions (Heeks 2002), thus enabling public managers to interpret performance results and make strategic and operational decisions. Niven (2003) has proposed a model adapted from the BSC to be used by public organizations, in which the four perspectives are: public budget, citizens and enterprises, internal processes, and innovation and learning. This model is a first step towards performance assessment in the public sector, but is still considered a limited means of capturing how citizens perceive performance.

The literature does not present a variety of theoretical models specifically designed to measure and assess e-gov performance. One example is the one proposed by Schedler *et al.* (2004); assuming that e-gov supports interactions that are internal and external to the public administration, the authors propose a performance assessment model which accounts for the four central elements of e-gov through which interactions may be expressed: electronic democracy and participation, electronic production networks, electronic public services, and electronic internal collaboration. Each of these four elements has its own distinctive features determining the set of applications needed for internal and external interactions through the government. Schedler's model is tailored for e-gov performance assessment but it also fails to fully capture the perspective of citizens.

Incorporating the perspective of citizens into e-gov performance assessment models

Both Niven's and Schedler's models try to incorporate the perspectives of citizens. However, they lack a method designed to get citizens involved and they oversimplify performance assessment indicators, which are usually limited to indicators of the satisfaction of citizens regarding the services provided. Those models structure their assessment dimensions, focusing more often on internal than on external perspectives. Hence, there exists an opportunity to propose an assessment model in which performance dimensions and indicators are incorporated into existing models by involving citizens in the process of determining relevant dimensions. Olphert and Damodaran (2007) discuss the importance of the participation and involvement of citizens throughout the different stages of development of e-gov, in order to maximize potential benefits for both government and citizens. James (2011) argues that the internal use of performance information within the government promotes its use by public managers only, and much less attention has been paid to its use by citizens. Making performance information available to citizens is an important issue in the process of determining the dimensions of performance that really matter to citizens.

CONCEPTUAL FRAMEWORK

The technology–society relationship can be analyzed from two different perspectives: one based on technological determinism, which views technology as the propeller of

social and cultural change; and another based on social constructivism, which regards technology as a social phenomenon modelled and produced by society, in which social and technological aspects are mutually determining (Avgerou 2002).

Limitations of the deterministic perspective in assessing e-gov performance

E-gov brings about significant organizational and social impact. Mackenzie and Wajcman (1985) and Orlikowski (2000) argue that the technology–society relationship is usually analyzed from the deterministic perspective. Several authors argue that the evaluation of ICT's impact on government performance often follows a deterministic rationale, based on the assumption that technology enhances organizational performance, reduces costs, and increases efficiency of processes (Fountain 2001; Taylor 1998). Assessing e-gov without considering the social context restricts assessment to the purely economic level. The consequence of this economic rationale is that it ultimately focuses on economic efficiency and the costs of technology. This leads to the creation of e-gov policies aimed primarily at enhancing internal government performance, i.e. increasing its efficiency or improving service delivery, and not necessarily at development, in the sense of its interaction with society. The deterministic view takes no account of the nature and strength of the multiple social processes incorporated in the society–technology relationship through e-gov. Due to the public nature and social role of governmental agencies, the use of ICT by public management requires a broader approach than the one adopted by the deterministic perspective.

Citizen-centric e-government requires a broader conceptual framework

To accommodate a broader view of performance assessment, the conceptual framework used in this study is supported by emerging theoretical perspectives that take into account the social context in which technology operates, as well as the role of the social actors who shape technological structures. This framework arises from close examination of the technology–society relationship from a non-deterministic perspective, in which social changes can be viewed as both cause and effect of how technology is adopted and used. Our approach is not based on technological determinism and its economic rationality, as it clearly restricts and ignores the interpretative flexibility of social actors, i.e. their interpretations of technological artefacts and how they are conceived and implemented (Orlikowski 1992, 2000; Pozzebon 2000). We have adopted a social perspective on e-gov development and performance assessment, therefore accounting for a social constructivist theoretical perspective, which assumes that technological artefacts are socially constructed, and allows a social analysis of their construction, content, and use (Pinch and Bijker 1987).

Social constructivism is an emerging social perspective. It opposes technological determinism, and takes into account the social context of agents, the process of building reality from scripts (meaning, interpretation, and action), and the processes of using and changing technological structure (Bijker *et al.* 1987; Mackenzie and Wajcman 1985). By adopting this perspective, we are assuming that e-gov is socially constructed, which reinstates the need to account for social actors, i.e. policy makers, public managers, IT implementers, citizens, and enterprises, as well as their influences, interactions, and interests in its construction process. Ultimately, the rationale behind the choice for the social constructivist approach lies in the fact that the technology used by e-gov is deeply embedded in social processes.

Pozzebon *et al.* (2009) propose a conceptual framework purposefully designed to investigate the social consequences of ICT implementation and use from a community or societal level. This framework was influenced by two theoretical approaches that analyze

the social forces that shape technology: social shaping of technology (SST) (Mackenzie and Wajcman 1985), and structuration theory (ST) (Giddens 1984). SST refers to social influence on the nature of technology and postulates that technology does not have predefined and rigid characteristics; instead, it is a dynamic product of society (Bijker and Law 1992; Pinch and Bijker 1987). ST, in turn, is an attempt to reconcile theoretical dichotomies regarding social systems, such as agent and structure, and micro and macro perspectives of individuals and society. In ST, all these classic dualisms are replaced by the concept of duality. Giddens suggests that duality of structure implies that the properties of the structure in social systems are both the means and the results of practices comprised within this system. The structurationist approach to ICT provides a theoretical perspective to investigate the constructive role of social practices in creating and changing technology in organizational and social environments (Orlikowski 1992, 2000; Pozzebon and Pinsonneault 2001).

The conceptual framework proposed in this study, inspired by the work of Pozzebon *et al.* (2009), combines three concepts from the theoretical perspectives previously described: (i) relevant social groups, (ii) process of negotiation, and (iii) technology-in-practice.

Relevant social groups comprise social actors who share a set of assumptions. They share identifiable interpretative standards, meanings, and actions regarding the use of technology, and are able to both develop and shape it. DeSanctis and Poole (1994) claim that technology emerges from the interactions among heterogeneous social actors and it is only manifested when social groups incorporate technology itself and the social structures in which they are immersed. Different interpretations, social interests, cultural meanings, and conflicts arise from social interactions between relevant social groups, leading to negotiation processes. Hence, the *process of negotiation* arises because those different relevant social groups attribute different meanings to a single technological artefact; i.e. their concerns and practices vary, as they have different expectations regarding the technology they use (Bijker and Law 1992). These differences result in the need for groups to negotiate their expectations, which, in turn, affects the development of technology and its resulting artefacts.

Finally, *technology-in-practice*, which is central to this framework, was proposed by Orlikowski (2000) and is related to the idea of incorporated structure and structure incorporation through use. Hence, putting technology into 'practice', or to use, by social actors involves examining how actors use it, so as to relate it to appropriation of technological structures in different contexts. Orlikowski proposes a conceptual approach based on practice, in order to understand recursive interactions among people, technology, and social action and, consequently, the creation and modification of technology by use. Hence, the concept of *technology-in-practice* can be defined as a set of rules and resources (re)created through constant interactions between people and technology (Orlikowski 2000).

The three concepts that arise from the structurationist view of technology and social shaping of technology theory have influenced our epistemological position, as they have made us understand that e-gov is socially constructed by different relevant social groups. They also support our philosophical approach to the object of study.

RESEARCH METHODS AND CASE SELECTION

Due to the technological, political, and social nature of e-gov and its social construction process, the methodological approach used is qualitative. Among the research strategies

presented by Creswell (2003) for qualitative studies, the research methodology used in this study is based on a qualitative single case study. The choice of a single case methodology is based on the concepts and requisites set forth by Stake (1995). In Stake's terms, the selection of a single case study can be justified by its intrinsic and instrumental nature. Intrinsic because it draws attention to some unique and outstanding characteristics: São Paulo is not only the largest and richest Brazilian city but it also has a tradition of being the promoter of the most innovative e-gov experiences in the country. We argue that the São Paulo e-gov platform itself represents a rich object of investigation. In addition, experiences in emerging countries like Brazil are drawing increasing attention and are worth documenting for further comparison with developed countries. Instrumental because our investigation aims at building a better understanding of e-gov performance assessment from a citizen perspective that goes beyond this particular case, i.e. we seek to achieve a certain theoretical generalization with our results. The data collection method employed was in-depth interviews with social actors (Kvale 1996; Walsham 1995).

Principles of triangulation protocols were sought to increase the reliability of the case under study, making the interpretation of the empirical data collected credible. Interviews with key actors in different relevant social groups characterize the triangulation of data sources. Methodological triangulation refers to the use of two or more distinct methods to collect and interpret data. In addition to the interviews with representatives from relevant social groups, working sessions with government experts (public policy makers, managers, and ICT implementation team) and document analyses were conducted in order to understand the social context of the technological structures in practice.

The semi-structured protocol adopted in the data collection process was also crucial in dealing with matters beyond purely technical rationality. The data analysis method used was based on an interactive approach for data reduction and coding, as proposed by Miles and Huberman (1994).

The analysis of the social scope of e-gov is enriched by a qualitative and interpretative approach, as it assumes that reality is socially constructed, which facilitates the understanding of the phenomenon from the points of view of the actors in their social, economic, and cultural contexts, and does not regard a perfect study design or collection of all relevant data as premises for relevant and scientific social inferences. The interpretive approach provides insight into the process of production of meanings, and also answers two fundamental questions: *what* and *how* these meanings are incorporated by the language and actions adopted by social actors.

The case chosen for this study involves e-gov implementation at the local government level in the São Paulo City Council (SPCC) in Brazil. The SPCC e-gov portal offers e-public services for 11 million inhabitants in the São Paulo metropolitan area, spread across 31 sub-councils in 96 local districts. São Paulo is the largest city in Brazil and in the southern hemisphere. It exerts a strong influence on the Brazilian economy and its commerce, arts, and entertainment.

The literature shows that among the different levels of government, the local government can be regarded as the closest to citizens and enterprises. Thus, local governments play a major role in providing basic public services for local sustainable economic and social development. At the local level, e-gov has considerable social impact on education, health, transportation, homes, and labour.

In addition to the economic and political relevance of São Paulo in Latin America, the selection of the SPCC portal also accounted for the fact that its public administration has been innovative regarding the use of ICT and e-gov. A subset of highly transactional and

TABLE 1 Profile of the interviewees

		Relevant social groups							
		Citizens		Enterprises		ICT implementers		Public managers	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%
Gender	Male	11	91.7%	5	62.5%	0	0.0%	1	50.0%
	Female	1	8.3%	3	37.5%	3	100.0%	1	50.0%
	Total	12	100.0%	8	100.0%	3	100.0%	2	100.0%
Age group	0 to 19	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	20 to 29	0	0.0%	2	25.0%	0	0.0%	0	0.0%
	30 to 39	6	50.0%	2	25.0%	3	100.0%	0	0.0%
	40 to 49	5	41.7%	3	37.5%	0	0.0%	1	50.0%
	50 to 59	1	8.3%	1	12.5%	0	0.0%	1	50.0%
	60 or over	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	Total	12	100.0%	8	100.0%	3	100.0%	2	100.0%
Level of education	Elementary	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	High school	3	25.0%	1	12.5%	0	0.0%	0	0.0%
	Tertiary	2	16.7%	4	50.0%	2	66.7%	0	0.0%
	Post-graduate	3	25.0%	3	37.5%	1	33.3%	2	100.0%
	Masters	3	25.0%	0	0.0%	0	0.0%	0	0.0%
	PhD	1	8.3%	0	0.0%	0	0.0%	0	0.0%
	Total	12	100.0%	8	100.0%	3	100.0%	2	100.0%

mature e-public services provided through the e-gov portal of the Secretary of Finance was selected, as they provide the ideal social and technological context for this study. The portal covers the largest user population and combines the largest social scope represented by socioeconomic and cultural diversity, multiple service access and delivery channels, sophisticated technology, and the largest transactional services portfolio.

Data collection

Data were collected from four *relevant social groups*: citizens (12 interviewees), members of enterprises (8 interviewees), ICT implementers, and public managers (5 interviewees). Overall, 25 in-depth interviews with an average duration of 40 minutes were conducted. The process of identification of managers and ICT implementers was based on the snowballing technique as indicated by Collins (1985). For citizens and members of enterprises, identification was based on 528 e-mails received through the 'Contact Us' communication channel at the web portal monitored over a 30-day period. All e-mails were individually analyzed and had their content classified: 37 citizens were contacted and 20 agreed to be interviewed. Table 1 shows the profile of the interviewees.

Based on the conceptual references postulated by Kvale (1996), and the foundation upon which the conceptual framework is based, questions for interview scripts were formulated in order to collect as much evidence as possible of the views held by citizens regarding the e-gov portal and particularly regarding potential dimensions they consider important for assessing e-gov performance.

Using the research protocol designed to guide data collection, the interviews explored subjects relative to performance assessment of public services from the perspective of each interviewee. Interviews with users of the portal (citizens and enterprises) focused on their perceptions regarding the benefits of using the portal and its impact on their day-to-day lives. The researcher aimed at identifying performance dimensions that are

relevant to citizens. Interview scripts contained open questions and were designed based on the theoretical framework so as to explore mainly the concepts of *technology-in-practice* and *negotiation process*.

Interviewees were invited to speak about their experiences using the portal and were asked to provide details on what they liked best and least about it and describe their perceptions regarding portal performance and the performance of the communication channels with the SPCC. They were also asked to provide their opinion on how they believe their opinions could change the technological artefacts produced by the portal into new services and functions. All interviews were converted into accessible text format for further analysis.

Data analysis

The analysis of the collected data may be viewed as an activity of data organization and coding into standards, categories, and basic descriptive units, followed by an interpretative process that attributes meaning to the analysis and explains standards, categories, and basic descriptive units. In this study, the data analysis process was based on the conceptual model proposed by Miles and Huberman (1994). Data coding was performed on transcripts, and aimed to organize data by reducing meanings to a simpler format, thus enabling content systematization based on implicit meanings in the speech of the interviewee. Extensive reading and analysis of the transcribed data enabled the formulation of a preliminary set of freely coded ideas, interpretations, and concepts from our initial subjective analysis. This analysis enabled data categorization into relevant concepts and themes that emerged from the collected data for subsequent analysis and inferences about possible relationships between them.

Data coding and analysis was performed in three steps using QSR NVIVO software. This software provides a number of tools to handle data: coding, attribute creation, categorization, and relationship determination. The first step of the analytical process consists of free data coding, which produced a structured view of the main concepts and subjects that arose from the data. These concepts enabled researchers to structure, categorize, order, and generalize their experiences and observations regarding the theme studied. The second step undergoes a new data reduction process in order to produce more abstract concept patterns. The last step consists of exploring the relationships among data categories. Figure 1 summarizes the hierarchical network structure used to create performance dimensions that represent the perception of each relevant social group.

Each *case node* represents a cluster of existing relationships between concepts in a hierarchical network of nodes, in which the highest level has only one node, corresponding to the specific context of the social group (*case node*); the second hierarchical level comprises one or more nodes, corresponding to the set of relevant performance dimensions for each group (*tree nodes*); and the third hierarchical level has one or more nodes, which represent performance sub-dimensions contained in a dimension. A fourth hierarchical level, not dealt with in this study, could be composed of nodes containing performance indicators used to determine metrics for measurement and storage of measured performance\break values.

The preliminary data analysis (free coding) resulted in a total of 67 concept categories, namely *free nodes*. These concept categories portray the perspectives held by social groups regarding the performance assessment dimensions of e-gov. Progressing in the analysis means advancing into the next level of coding. In order for this to happen, *free nodes* are hierarchically organized into *tree nodes*, after being consolidated into a reduced set

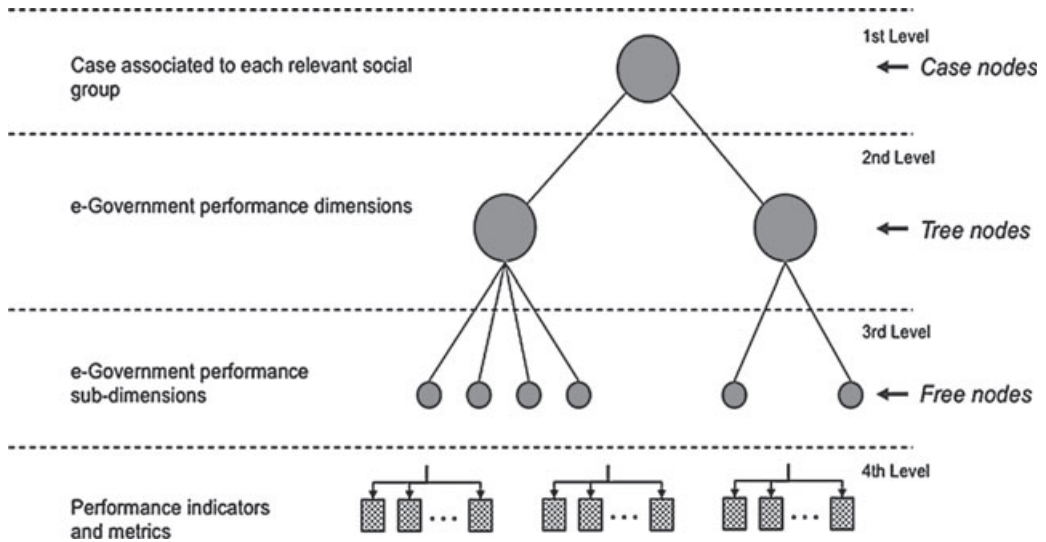


FIGURE 1 Levels of the hierarchical network of performance dimensions

of key-concepts. *Tree nodes* represent a hierarchical organization of *free nodes*; they are the result of this consolidation and represent broader concepts. The reduction process regrouped the initial 67 *free nodes*, consolidating them into 30 new concept categories, sorted by theme and clustered into nine *tree nodes*. The node structure summarizes the coding process and how the concept categories are grouped and linked. The data analyzed were synthesized into four models, represented by the four *case nodes* that emerged (figure 2), designed to represent relevant e-gov performance assessment dimensions from the perspectives of each relevant social group analyzed.

PRESENTATION OF RESULTS

The (7+2) performance dimensions identified

Data analysis produced nine relevant e-gov performance dimensions in the perspectives of the four social groups taken together; seven dimensions arose from the perspectives of citizens and enterprises. Incorporating the groups of public managers and ICT implementers into the analysis aggregated two new dimensions to our set, which appear exclusively in their perspectives, as they are related to internal matters of public administration, such as increasing efficiency, modernizing management, and transparency. This set of nine relevant e-gov performance dimensions in the perspectives of the four social groups was labelled the '(7+2) performance dimensions', as shown in table 2.

The performance assessment dimensions and sub-dimensions originally identified for each of the four relevant social groups are shown in table 3. When taken separately, six dimensions emerged from the perspective of citizens and six dimensions from the perspective of enterprises. Nevertheless, due to their close structural resemblance, the perspectives belonging to the social groups of citizens and enterprises were consolidated into a single group (citizens). In doing so, the dimension *trust in the portal* which emerged in the enterprise group, but not in the group of citizens, was incorporated along with the other performance sub-dimensions, making a total of seven dimensions.

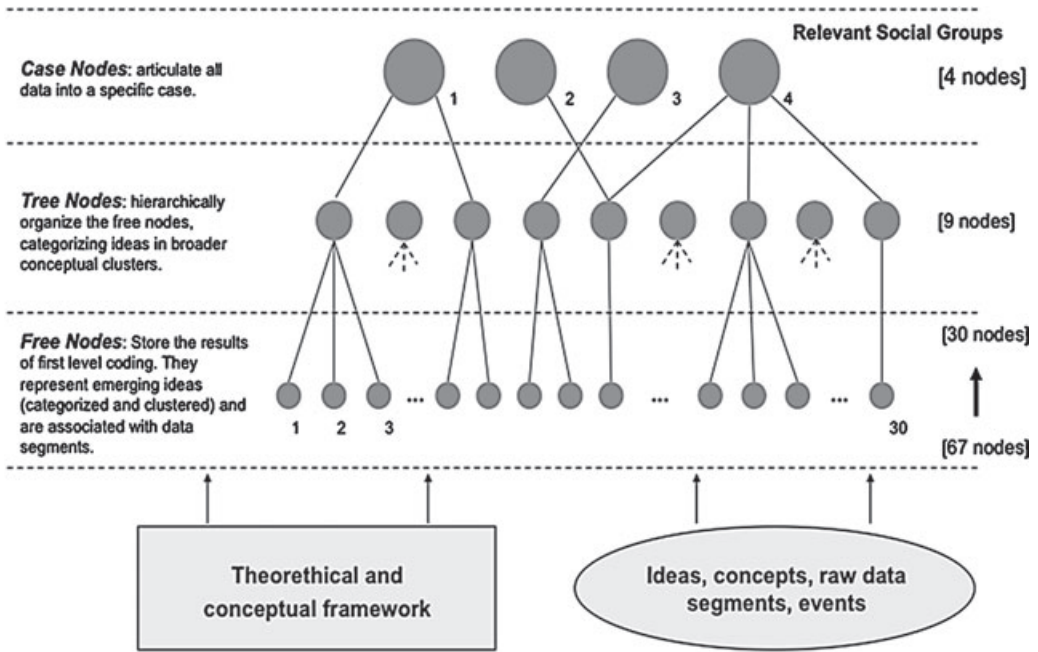


FIGURE 2 Hierarchy of node structures used to store conceptual coded data

TABLE 2 Consolidated performance dimensions in the perspectives of the four social groups

Consolidated perspective	Number of dimensions	Description of relevant dimensions
Citizens and enterprises	7	1. Understanding of citizens' needs 2. Portal convenience 3. Quality of portal services 4. Portal communication channel 5. Trust in the portal ← (incorporated dimension) 6. Quality of in-person services 7. Relationship between citizens and the SPCC
Public managers and ICT implementers	7+2 new	1. Efficiency of public administration 2. Management transparency

The seven dimensions identified in the perspective of citizens describe the social impacts of the technological artefacts provided by e-gov on their day-to-day lives. The analysis of the two remaining relevant social groups yielded five dimensions from the perspective of public managers and four dimensions from the perspective of ICT implementers. The four dimensions identified in the perspective of ICT implementers had already been incorporated into the perspective of citizens, and among the five dimensions which emerged from the perspective of public managers, only two – *efficiency of public administration* and *management transparency* – had not yet been incorporated as one of the seven dimensions from the perspective of citizens. Due to the fact that these dimensions overlap, the number of dimensions and sub-dimensions presented in table 3 cannot be added together.

TABLE 3 Performance dimensions per social group

Perspective	Number of dimensions	Number of sub-dimensions	Description of relevant dimensions
Citizens	6	21	<ol style="list-style-type: none"> 1. Understanding of citizens' needs 2. Portal convenience 3. Quality of portal services 4. Portal communication channel 5. Quality of in-person services 6. Relationship between citizens and the SPCC
Enterprises	6	20	<ol style="list-style-type: none"> 1. Quality of portal services 2. Portal convenience 3. Understanding of citizens' needs 4. Trust in the portal 5. Portal communication channel 6. Relationship between citizens and the SPCC
Public managers	5	18	<ol style="list-style-type: none"> 1. Efficiency of public administration 2. Quality of portal services 3. Quality of in-person services 4. Relationship between citizens and the SPCC 5. Management transparency
ICT implementers	4	16	<ol style="list-style-type: none"> 1. Understanding of citizens' needs 2. Quality of portal services 3. Portal convenience 4. Relationship between citizens and the SPCC

A single dimension may be relevant to one or more groups, but not necessarily be regarded as having the same degree of importance or priority. The numeric sequence attributed to dimension descriptions indicates the relative importance of the dimensions to each group, '1' being the most important and '6' the least important. The (7+2) performance dimensions identified represent a conceptual clustering and translate, according to the interpretation of the researcher, the perceptions of interviewees regarding important aspects related to e-gov performance. The concepts it supports are homogeneous for the four groups; thus, groups have similar interpretations of the same concepts. The conceptual description of the (7+2) dimensions that emerged from the interpreted data collected from relevant social groups is provided in table 4.

Discussion

Understanding the social nature of e-gov, the interaction between relevant social groups and their influences in shaping its construction is of fundamental importance for designing performance assessment models capable of capturing its social impacts. The approach we aimed for was to be complementary to the existing performance assessment models, i.e. the BSC and the BSC model adapted by Niven and Schedler, bringing a set of dimensions that would be capable of translating tangible and intangible benefits to citizens, based on their perceptions regarding relevance in e-gov performance. This approach foresees the incorporation of a new and broad perspective to existing models, determined by the involvement of citizens in the process of construction of e-gov. This new perspective defines relevant dimensions and guides the process of creation of performance indicators; it also aims at significantly increasing the ability of public

TABLE 4 *Conceptual description of performance dimensions*

Performance dimension	Conceptual description
Understanding of citizens' needs	City council's ability to perceive, analyze, and understand the needs of different audiences for information and services relative to different types of relationship (G2B, G2C, G2E, and G2G).
Portal convenience	Practicality, comfort, and adequacy to citizens' everyday life. Includes perceptions regarding the scope (the number of services available in electronic format) and depth (being able to use a specific service entirely online) of electronic services.
Quality of portal services	Overall satisfaction of citizens with the use of electronic public services through the portal in terms of how much value it adds to citizens, search mechanisms, usability, navigability, organization, appropriate language, and simplicity.
Portal communication channel	Communication between society and government through portal's Contact Us channel to send government messages of any nature. Perceived by citizens as a means of democratic participation, transparency, and social control. Encompasses citizens' perceptions regarding communication control mechanisms, answers to e-mails sent, request number for message follow-up, quality of answers, and respect.
Trust in the portal	Portal safety (reliability, authenticity and information integrity), and subjective aspects related to how the public sector's image is associated with dimensions of modernity and technological innovation. Also related to citizens' perceptions and expectations regarding authenticity of the information and services available at the portal (reliability and integrity).
Quality of in-person services	Same nature as the quality of portal services, but focuses on public services offered at a physical service point, whether in-person or not, such as service points and call centres.
Relationship between citizens and the SPCC	Relates to the concept of 'portal communication channel'; however, its nature differs, beyond bidirectional communication between society and the government, and it refers to local public bodies' ability to forge relationships between social actors. It involves interactive communication mechanisms, organized per audience and in communities of practice, as well as citizens' perceptions regarding proximity of local public bodies and the access to information about public managers' actions.
Efficiency of public administration	Public managers' economic rationality, improvement in resource allocation; and, in organizational terms, as the search for new management models for the public sector, especially to change the culture towards citizen-focused management. Gains in process efficiency, operational cost reduction, cultural change, focus on citizens and modernization of the public sector.
Management transparency	Transparency of information available about public administration and managers. It was more prominent among social groups of public managers and ICT implementers, despite having been addressed by the social group of enterprises. It includes perceptions regarding social control, which enables citizens to monitor public managers' actions and their participation in the democratic process.

administrators to manage e-gov, thus maximizing their efficiency and social impact, and leading to the design of more effective public policies.

The existing performance assessment models proposed by Niven (2003) and Schedler *et al.* (2004) or those based on the customer satisfaction approach (Freed 2003; Van Ryzin *et al.* 2004) take into account the needs of citizens from their own perspective. Nevertheless, the common ground of these models is the deterministic perspective in assessing e-gov performance.

The process of inductive analysis, which is based on identifying meanings in the speech of interviewees and sorting them into different concepts, resulted in four perspectives representing the relevant performance dimensions and sub-dimensions for the social groups analyzed. They evidence significant differences in how groups that are internal and external to the government perceive performance. On the one hand, these results reinforce two propositions posited in the literature: (i) the need to include e-gov performance assessment metrics from the perspective of citizens; and (ii) acknowledging the importance of their participation in the process of construction of e-gov. On the other hand, they contribute to expanding these concepts.

The first proposition is directly related to the dimension regarded as important by Niven (2003) and Schedler *et al.* (2004), who look separately into the perspectives of citizens in their performance assessment models. However, these authors fail to provide a detailed description of the perspective of citizens, as their models do not contain descriptions of performance dimensions and sub-dimensions that arise from the perception of citizens. The model proposed by Schedler *et al.* recommends a set of performance indicators, established from the views of public managers, to assess performance from the perspective of citizens, which are possibly unable to capture aspects relevant to them. The second proposition refers to the idea of social groups participating in the e-gov socio-technical network, as proposed by Olphert and Damodaran (2007). According to these authors, e-gov is a network, comprising a set of large-scale information systems, which affect the lives of citizens, who, in turn, should be involved in the design, development, and assessment of these systems.

In order to produce a consolidated view of relevant performance dimensions and sub-dimensions for the four social groups, a model was proposed to consolidate the nine performance dimensions that arise from the in-depth analysis of our data on the perceptions of relevant social groups regarding the performance of e-gov technological artefacts, namely the '(7+2) model'. The structure of this model is supported by three axes, graphically represented by a cube in which the *x*-axis represents relevant social groups, the *y*-axis represents performance dimensions, and the *z*-axis represents the type of access and delivery channel. The model is presented in figure 3. It constitutes the main result of this study.

Among the nine dimensions incorporated into the model, seven were more prominent among groups of citizens and enterprises, and two concerned public managers almost exclusively. This imbalance between the number of dimensions reveals a need to direct performance assessment outwards from government. Including the social groups of public managers and ICT implementers in our analysis allowed us to find that, although public management is investing significant financial and technological resources in its e-gov programs, its performance assessment is still strongly directed towards internal efficiency results.

There are significant differences in how groups inside and outside the government perceive performance. Although many authors clearly point out the need for organizations

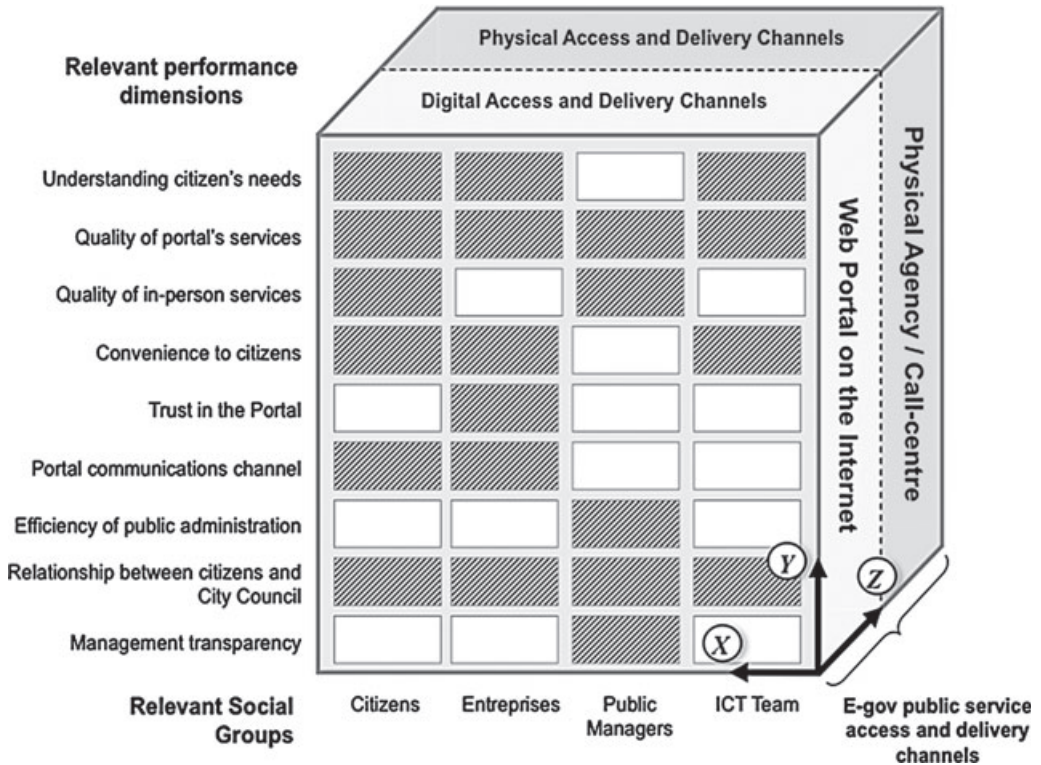


FIGURE 3 Performance dimensions (7+2) model

to assess performance from several perspectives (Fitzgerald *et al.* 1991; Kaplan and Norton 1997; Niven 2003), public managers still place disproportionate emphasis on matters of internal efficiency. Internal dimensions, such as *public administration efficiency* and *transparent management*, are emphasized much more by public managers; which reveals a trend (documented in the literature) for governments to place the focus of their structures on their internal needs. As a consequence, performance assessment models and indicators tend to focus on internal performance. This also reveals that important dimensions from the perspective of citizens are of little or no relevance to public managers and ICT implementers, thus demonstrating how the expectations of different groups point in different directions, and there is an obvious breach in the communication between citizens and the government throughout the stages of the e-gov construction process. As a consequence, the negotiation process between relevant social groups is negatively affected.

CONCLUSION

The results of this study provide theoretical and practical contributions to the understanding of phenomena related to performance assessment in e-gov. The relevance of proposing a model of performance dimensions, which enables the creation of indicators capable of measuring social impact, lies in the fact that public managers and technology developers, once they are aware of the dimensions perceived as relevant by citizens, will be more precise about the scope of electronic public services to be offered.

A theoretical contribution of this study is related to the articulation of a structure comprising concepts from different theoretical approaches. Understanding that technology is socially constructed changes how e-gov is conceived, developed, and assessed. Conceptual contributions, resulting from the exercise of interpreting meanings and data collected in this qualitative survey, are complementary and applicable to existing performance assessment models. Concepts incorporated into the theoretical framework at every stage of the research methodology allowed the adequacy of concepts to be tested gradually throughout the stages of this research project. The conceptual framework has proven to be highly appropriate for in-depth analysis of technological issues related to e-gov, its technological artefacts, and social actors.

This study makes two practical contributions to public managers. The first is the methodological approach that can be applied to other case studies. Performance assessment models for e-gov, capable of measuring the social impacts of technological choices made by the public sector, are a new research field. The lack of models for public managers, associated with frequent dysfunctions observed in public administrations, has rendered performance assessment subjective and ideological. The main contribution of this study is to the work of public managers, who seek to understand the social and technological context created by e-gov in order to promote the development of effective public policies. The methodological approach and the conceptual structure designed in this study can be imported and applied in other interpretative case studies focused on the relationships between social actors in a technological context.

Such a methodological approach provides a detailed structure for public managers, with the necessary steps to engage various relevant social groups during all the stages of the construction process of e-gov, including performance assessment. In this context, four of the processes used are noteworthy due to their flexibility and easy implementation: (i) the process of identification and selection of relevant social groups; (ii) the process of incorporating concepts from the theoretical framework into interview scripts; (iii) data organization and analysis; and (iv) the process of creating categories and conceptual groups, identifying the hierarchical relationships between them, and further mapping these performance dimensions and sub-dimensions. All of these processes put into practice the key concepts from the theoretical framework.

The second practical contribution for managers is providing a model of performance dimensions to steer development of performance indicators capable of capturing the social impact of e-gov on the lives of citizens and enterprises. Public administration around the world has been investing significant financial and technological resources in e-gov programs, rendering performance assessment a need for public managers (Heeks 2002; Olphert and Damodaran 2007). Assessment of the social and political impacts of adopting technological resources in the public sector, and the search for the causes and effects of its performance, require deep understanding of social and technological contexts, and of how relevant social groups build social and technological structures. Although extremely useful, a conceptual theoretical approach to performance assessment, based on social constructivist theories, which accounts for social impacts, is still limited.

REFERENCES

- Abramson, M.A. and G.E. Means. 2001. *E-gov 2001 – IBM Endowment for the Business of Government*. Lanham, MD: Rowman & Littlefield.
- Andrews, R., G.A. Boyne, J. Law, and R.M. Walker. 2005. 'External Constraints on Local Service Standards: The Case of Comprehensive Performance Assessment in English Local Government', *Public Administration*, 83, 3, 639–56.

- Avgerou, C. 2002. *Information Systems and Global Diversity*. Oxford: Oxford University Press.
- Avgerou, C., C. Ciborra, and F. Land. 2004. *The Social Study of Information and Communication Technology – Innovation, Actors and Contexts*. New York: Oxford University Press.
- Barzelay, M. 2000. 'The New Public Management: A Bibliographical Essay for Latin American (and Other) Scholars', *International Public Management Journal*, 3, 2, 229–65.
- Barzelay, M. 2001. *The New Public Management: Improving Research and Policy Dialogue*. Los Angeles, CA: University of California Press.
- Behn, R.D. 2003. 'Why Measure Performance? Different Purposes Require Different Measures', *Public Administration Review*, 63, 5, 586–606.
- Bijker, W.E. and J. Law. 1992. *Shaping Technology/Building Society – Studies in Sociotechnical Change*. Cambridge, MA: MIT Press.
- Bijker, W.E., T.P. Hughes and T. Pinch. 1987. *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge, MA: MIT Press.
- Bovaird, T. 2007. 'Beyond Engagement and Participation: User and Community Coproduction of Services', *Public Administration Review*, 67, 5, 846–60.
- Brandsen, T. and V. Pestoff. 2006. 'Co-Production, the Third Sector and the Delivery of Public Services: An Introduction', *Public Management Review*, 8, 4, 493–501.
- Bresser-Pereira, L.C. 2010. 'Democracy, Social State and Managerial Reform', *RAE, Revista de Administração de Empresas*, 50, 1, 112–16.
- Brewer, G.A. 2006. 'All Measures of Performance are Subjective', in G.A. Boyne, K.J. Meier, L.J. O'Toole and R.M. Walker (eds), *Public Service Performance: Perspectives on Measurement and Management*. Cambridge: Cambridge University Press, pp. 35–54.
- Callahan, R.F. and G.R. Gilbert. 2005. 'End-User Satisfaction and Design Features of Public Agencies', *American Review of Public Administration*, 35, 1, 57–73.
- Collins, H.M. 1985. *Changing Order: Replication and Induction in Scientific Practice*. London: Sage Publications.
- Creswell, J.W. 2003. *Research Design: Qualitative, Quantitative, and Mixed Approaches*. Thousand Oaks, CA: Sage Publications.
- DeSanctis, G. and M.S. Poole. 1994. 'Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory', *Organization Science*, 5, 2, 121–47.
- Eggers, W.D. 2005. *Government 2.0: Using Technology to Improve Education, Cut Red Tape, Reduce Gridlock and Enhance Democracy*. Plymouth, UK: Rowman & Littlefield.
- Ferli, E., A. Pettigrew, L. Ashburner and L. Fitzgerald. 1996. *The New Public Management in Action*. London: Oxford University Press.
- Fitzgerald, L., R. Johnston, S. Brignall, R. Silvestro and C. Voss. 1991. *Performance Measurement in Service Businesses*. London: CIMA (Chartered Institute of Management Accountants).
- Fountain, J. 2001. *Building the Virtual State – Information Technology and Institutional Change*. Washington, DC: Brookings Institution Press.
- Freed, L. 2003. 'E-Government Satisfaction Index', in *American Customer Satisfaction Index*. Ann Arbor, MI: ForeSee Results.
- Giddens, A. 1984. *A constituição da Sociedade*. São Paulo: Editora Martins Fontes.
- Heeks, R. 2002. *Reinventing Government in the Information Age – International Practice in IT-Enabled Public Sector Reform*. Abingdon: Routledge.
- Holmes, D. 2002. *e.gov – eBusiness Strategies for Government*. London: Nicholas Brealey Publishing.
- Holzer, M. and K. Kloby. 2005. 'Sustaining Citizen-Driven Performance Improvement: Models for Adoption and Issues of Sustainability'. *The Innovation Journal: The Public Sector Innovation Journal*, 10, 1, 521–41.
- James, O. 2011. 'Performance Measures and Democracy: Information Effects on Citizens in Field and Laboratory Experiments', *Journal of Public Administration Research and Theory*, 21, 3, 399–418.
- Kaplan, R.S. and D.P. Norton. 1997. *Estrategia em Ação, Balanced Scorecard*. Rio de Janeiro: Editora Campus.
- Kelly, J.M. 2005. 'The Dilemma of the Unsatisfied Customer in a Market Model of Public Administration', *Public Administration Review*, 65, 1, 76–84.
- Klitgaard, R. and P.C. Light. 2005. *High-Performance Government – Structure, Leadership, Incentives*. Santa Monica, CA: RAND Corporation.
- Kvale, S. 1996. *Interviews – An Introduction to Qualitative Research Interviewing*. Thousand Oaks, CA: Sage Publications.
- Lenk, K. and R. Traunmüller. 2002. 'Electronic Government: Where Are We Heading?' *Proceedings of Electronic Government: First International Conference, EGOV 2002, Aix-en-Provence, France, 2–5 September*, pp. 1–9.
- Mackenzie, D. and J. Wajcman. 1985. *The Social Shaping of Technology*. Milton Keynes: Open University Press.
- Marr, B. 2009. *Managing and Delivering Performance: How Government, Public Sector, and Not-for-Profit Organizations Can Measure and Manage What Really Matters*. Oxford: Butterworth-Heinemann.
- Meijer, A.J. 2011. 'Networked Coproduction of Public Services in Virtual Communities: From Government-Centric to a Community Approach to Public Service Support', *Public Administration Review*, 71, 4, 598–608.
- Miles, M.B. and M. Huberman. 1994. *An Expanded Sourcebook Qualitative Data Analysis*. Thousand Oaks, CA: Sage Publications.

- Niven, P.R. 2003. *Balanced Scorecard for Government and Nonprofit Agencies*. Hoboken, NJ: John Wiley & Sons.
- Olphert, W. and L. Damodaran. 2007. 'Citizen Participation and Engagement in the Design of e-gov Services: The Missing Link in Effective ICT Design and Delivery', *Journal of the Association of Information Systems*, 8, 9, 491–507.
- Orlikowski, W.J. 1992. 'The Duality of Technology: Rethinking the Concept of Technology in Organisations', *Organisation Science*, 5, 1, 51–70.
- Orlikowski, W.J. 2000. 'Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organisations', *Organisation Science*, 11, 4, 404–28.
- Pavlichev, A. and G.D. Garson. 2004. *Digital Government: Principles and Best Practices*. London: Idea Group Publishing.
- Pestoff, V. 2006. 'Citizens and Co-Production of Welfare Services: Childcare in Eight European Countries', *Public Management Review*, 8, 4, 503–19.
- Pinch, T.J. and W.E. Bijker. 1987. 'The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other', in W.E. Bijker, T.P. Hughes and T. Pinch (eds.), *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge, MA: MIT Press, pp. 17–50.
- Popovich, M.G. 1998. *Creating High-Performance Government Organizations*. San Francisco, CA: Jossey-Bass.
- Pozzebon, M. 2000. 'Combining a Structuration Approach with a Behavioral-Based Model to Investigate ERP Usage', in H.M. Chung (ed.), *Proceedings of the Sixth Americas Conference on Information Systems*. Long Beach, CA: AMCIS.
- Pozzebon, M. and A. Pinsonneault. 2001. 'Structuration Theory in the IS Field: An Assessment of Research Strategies', in S. Smithson, J.E. Gricar, M. Podlogar and S. Avgerinou (eds), *Proceedings of the Ninth European Conference on Information Systems*. Bled, Slovenia: Moderna organizacija, pp. 205–16.
- Pozzebon, M., E. Diniz and M. Jayo. 2009. 'Adapting the Structurationist View of Technology for Studies at the Community/Societal Levels', in Y.K. Dwivedi, B. Lal, M.D. Williams, S.L. Schneberger and M.R. Wade (eds), *Handbook of Research on Contemporary Theoretical Models in Information Systems*. Hershey, PA: Information Science Reference, IGI Global, pp. 18–33.
- Schedler, K. and J. Felix. 2000. 'Quality in Public Management: The Customer Perspective', *International Public Management Journal*, 3, 125–43.
- Schedler, K. and L. Summermatter. 2007. 'Customer Orientation in Electronic Government: Motives and Effects', *Government Information Quarterly*, 24, 2, 291–311.
- Schedler, K., L. Summermatter and B. Schmidt. 2004. *Managing the Electronic Government – From Vision to Practice*. Greenwich, CT: Information Age Publishing.
- Stake, R.E. 1995. *The Art of Case Study Research*. Thousand Oaks, CA: Sage Publications.
- Steyaert, J.C. 2004. 'Measuring the Performance of Electronic Government Services', *Information & Management*, 41, 3, 369–75.
- Tapscott, D. and A.D. Williams. 2006. *Wikinomics: How Mass Collaboration Changes Everything*. New York: Penguin.
- Taylor, J.C. 1998. 'Participative Design: Linking BPR and SAP with an STS Approach', *Journal of Organizational Change Management*, 11, 3, 243–5.
- Van Ryzin, G.G. 2004. 'Expectations, Performance, and Citizen Satisfaction with Urban Services', *Journal of Policy, Analysis and Management*, 23, 3, 433–88.
- Van Ryzin, G.G. 2006. 'Testing the Expectancy-Disconfirmation Model of Citizen Satisfaction with Local Government', *Journal of Public Administration Research and Theory*, 16, 599–611.
- Van Ryzin, G.G., D. Muzzio, S. Immerwahr, L. Gulick and E. Martinez. 2004. 'Drivers and Consequences of Citizen Satisfaction: An Application of the American Customer Satisfaction Index Model to New York City', *Public Administration Review*, 64, 3, 331–41.
- Walsham, G. 1995. 'Interpretive Case Studies in IS Research: Nature and Method', *European Journal of Information Systems*, 4, 74–81.
- Wimmer, M.A. and U. Holler. 2003. *Applying a Holistic Approach to Develop User-Friendly, Customer-Oriented E-Government Portal Interfaces. Universal Access: Theoretical Perspectives, Practice, and Experience*. Berlin: Springer-Verlag.