



# The forgotten promise of e-government maturity: Assessing responsiveness in the digital public sector

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## ABSTRACT

Assessing e-government responsiveness is one of the major gaps in the currently dominant e-government maturity models. While we have a relatively large pool of models focusing on technological and organizational integration from a supply side perspective, measures of responsiveness of e-government systems from a user perspective are still lacking. Replicating a study from New Zealand and Australia, this study explores the response time and quality of e-mail response in Danish local and central governments (N = 175). Despite that Denmark is high ranking in international benchmark studies, we find that one third of central government agencies did not respond at all, and close to 80% of the ministries provided none or incomplete answers. Local government responds faster and provides answers that are more complete and accurate than those provided by central government. Implications for e-government are discussed.

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## 1. Introduction

The Scandinavian countries have a well-established record of top ranking in e-government service readiness in many international studies and benchmarking reports (Economist Intelligence Unit, 2009; United Nations Public Administration Network, 2010). High internet penetration rates, the development of an advanced private and public IT infrastructure, high digital literacy rates, and the extensive development of digital services in the public sector make countries such as Denmark an ideal case for assessing the impact of information technology on the changing relationship between public information systems and their users, the citizens (Andersen, Bjørn-Andersen, & Dedrick, 2003).

The digitalization of communication with citizens and businesses is one of the cornerstones of the digitalization of the public sector (Andersen, 2002). In the last decades, massive investments from governments across the world have been directed for the design, implementation, and management of information systems in public agencies providing a window for online interaction with citizens and businesses. An increasing number of governments have now established a record of adopting national strategies for the adoption of e-government solutions, aimed at achieving objectives of increased efficiency vis-à-vis businesses, citizens, and civil society organizations.

Digital government “encompasses the use of information and communication technologies (ICTs) to enable citizens, politicians, government agencies, and other organizations to work among them-

selves and with each other and to carry out activities that support civic life” (Robertson & Vatrapu, 2010, p. 319). Based on an analysis of several definitions of digital government, Robertson and Vatrapu (2010) conclude that

[T]he major stakeholders for digital government are citizens, administrative bodies within government, and businesses. The aims are typical for ICT deployment: streamlining and simplifying administrative processes, cost cutting, improving services, and generally improving efficiency (Robertson & Vatrapu, 2010, p. 319).

Despite the emergence of Web 2.0 and synchronous communication technologies — such as chat and video conferencing — e-mail, which has been a frontrunner in citizen–government interaction before, and in parallel with, webpage-oriented online self-service, is still the dominant means of digital communication adopted in public sector organizations. Facing time-consuming and costly communication through ordinary postal services, e-mail provides a price competitive and more reliable channel for asynchronous communication for both the providers and users of e-government services.

e-Mail has been adopted by all government offices and became the preferred technology for transferring files from one office to another. However, due to some of the inherent problems with it, governments have recently tried to supplement the use of e-mail with self-service, using e-mail especially in relation to the unstructured information that is often communicated through this channel. e-Mail communication is context-sensitive, and users can experience loss of meaning or be provided with wrong information if the communication is received out of its original context. e-Mail users also often experience information overload, e.g. when having to manage inboxes filled with

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irrelevant e-mails sent by mailing lists, unsolicited e-mails sent by spammers, and by unimportant e-mails cc'd to all recipients. Furthermore, the use of asynchronous media such as e-mail often results in inconsistency in information content, since the frequency of e-mail updates is not necessarily evenly distributed and synchronized among the people working on a specific document. Yet, e-mail is widely spread in government and the most widely used medium of information technology-enabled communication between citizens/companies and the public sector, whereas other technologies, such as ftp, chat, social network services, are still marginal in use.

Information systems strategies in the public sector are now increasingly focused on shifting from a government-centered perspective, to a user-centered one (OECD, 2009). In such a user-centered perspective, dimensions of citizen inclusion, participation, user satisfaction and responsiveness gain crucial relevance (Scott, DeLone, & Golden, 2009). The measurement of e-government progress on the supply-side (that is, the government-side) has progressed to a relevant extent, as testified by the growth of studies on issues such as public website sophistication, usability, etc., and the emergence of public and private initiatives of e-government performance ranking, benchmarking, and awards (Sørum, Medaglia, & Andersen, 2009). However, the demand-side (that is, the user/citizen-side) of e-government service measurement still remains underexplored.

Critics argue that, despite large investments, e-government policy makers are failing to achieve the objectives of increased efficiency, transparency, and responsiveness of the digital public services (Goldfinch, 2007; Heeks & Bailur, 2007; Helbig, Ramón Gil-García, & Ferro, 2009), but there is an absence of studies supporting these claims, and a lack of focus on the measurement of responsiveness of public information system-based services. As more and more citizens are using public information systems to interact with government and consume public services, the measurement of public information system success from a citizen perspective becomes one of the most important aspects to focus on (Rosacker & Olson, 2008; Scott et al., 2009; Wang & Liao, 2008). The responsiveness element of information systems is particularly relevant in a public sector context, in which not only service efficiency, but also the very legitimacy of governmental bodies is at stake. Further, for a modern welfare state such as Denmark, responsiveness of public information system-based services is even more relevant and important.

This paper aims to assess the responsiveness of information systems in the public sector by analyzing data on the e-mail response time of public agencies in Denmark, compared to the public agencies in New Zealand and Australia, drawing on previous research by Gauld, Gray, and McComb (2009). In particular, we are interested in the efficiency and effectiveness of e-mail inquiries across the municipal, regional and national levels of government in Denmark. We aim to contribute to the development of a citizen-centered perspective in e-government success measurement.

The design of this study on e-mail response times in the public sector closely follows the approach of a study conducted in New Zealand and Australia (Gauld et al., 2009). Although there are other studies on e-mail responsiveness in the public sector (Dečman, 2005; Kunstelj & Dečman, 2005; West, 2004), we have chosen to follow the overall research design of the New Zealand/Australia study both to help with solving the general information systems (IS) challenge of a lack of cumulative studies, and to provide comparability between cases that are perceived to be similarly high-ranking, according to global e-government readiness studies.

The next section discusses responsiveness as a needed input for the further development of e-government maturity models. The following section presents the case of Denmark, compared to the cases of Australia and New Zealand, and their relevance against international rankings of e-government readiness. After a section that provides information on data collection and data analysis, we discuss comparative data on e-mail response times and content quality of the

responses, divided by country and institutional level. In the conclusion we discuss the results and contributions of the study, highlight limitations, and suggest directions for future research on IS responsiveness from a citizen point of view.

## 2. Responsiveness and e-government maturity models

e-Government maturity models have gained popularity as a tool for assessing, comparing, and benchmarking the progress and success of e-government implementation in public sector organizations. The stage-based rationale behind e-government maturity models historically has drawn upon stage classifications in different academic disciplines that revolved around the concept of “maturity” and “immaturity” to assess and compare progress. In the field of software process improvement, for instance, the Capability Maturity Model determines how structured the software development process is (Paulk, Curtis, Chrissis, & Weber, 1993), while in business economics similar models can be found with regards to the Product Life Cycle concept (Lancaster & Massingham, 1998; Robson, 1997), and in the field of Information Systems (IS) frequent references are made to the Stages of Growth Model (Galliers & Sutherland, 1991).

The often cited article by Layne and Lee (2001) (861 citations on Google Scholar as of June 2011) published in *Government Information Quarterly* in 2001, argues that progress on e-government data integration is a matter of technological and organizational complexity, and has provided ground for a rich debate on how to design a maturity model that would most usefully capture the real progress of e-government adoption and its benefits (Grant & Chau, 2002; Reddick, 2004; Yang, 2003). Andersen and Henriksen (2006) have attempted to extend the Layne and Lee model by including a user perspective. They argue that Layne and Lee “have done little more than replicated the stage models from the e-commerce area focusing more on technological capabilities than on case handling and effectiveness in the public administration” (Andersen & Henriksen, 2006, p. 241). Andersen and Henriksen propose to apply a user focus on one axis of the stage model, and on potential activities driven by digitalization on the other axis. The focus shifts from capabilities of technologies within government, to activities for end users.

The model opens a fundamental debate which Bannister (2007) continues. Bannister argues that indexes and rankings of nations, which are often based on maturity models, tend to be meaningless and serve the sole purpose of enhancing governments' chances of achieving high international rankings. It is the “beauty contest” (Sørum et al., 2009) of the nations rather than the benefits for the citizens that drive e-government development. Because the maturity models hold the capacity to quantify e-government efforts and to compare them across nations, they tend to be the driver for national e-government policies and governance structures. In a recent review of impacts of e-government initiatives, as they are presented in the literature, this tendency is confirmed (Andersen et al., 2010). Fifty-five percent of the reported studies referred to impact-related capabilities of e-government initiatives rather than to strengthened interaction with users of e-government services, improved work conditions for civil servants, or value distribution. The results of the review indicate that measurable achievements in e-government are pursued rather than more intangible initiatives.

One of the fundamental elements of adopting a user perspective is the ability to assess responsiveness of e-government services. As stated by West (2004): “While it is important to have e-mail addresses available on government websites, they serve no purpose unless someone actually reads and responds to the messages that are received” (West, 2004, p. 22). e-Mail responsiveness is important from both the government and user/citizen perspectives. From the government perspective, e-mail responsiveness is an important component in assessing public sector service efficiency, effectiveness, and transparency against internally stated service commitments and external benchmarks

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