Diffusion of Personalized E-Government Services among Dutch Municipalities (An Empirical Investigation and Explanation)

Vincent Homburg[i]

Erasmus University Rotterdam

Faculty of Social Sciences, Comparative Public Service Innovation

PO Box 1738

3000 DR Rotterdam

The Netherlands

Andres Dijkshoorn

Erasmus University Rotterdam

Faculty of Social Sciences, Comparative Public Service Innovation

PO Box 1738

3000 DR Rotterdam

The Netherlands

Key words

e-government, personalization, IT diffusion, Dutch municipalities

Abstract

This article describes the trend of personalization in electronic service delivery, with a special focus on municipal electronic service delivery in the Netherlands. Personalization of electronic services refers to the one-to-one citizen orientation using authentication, profiling and customization techniques. The percentage of Dutch municipalities offering services through personalized electronic counters has increased from 14% (2006) to 28% (2009). Using binary logistic regression analyses of 2008 survey data, it is concluded that personalization is positively associated with size of municipalities but not with e-government and policy innovation statements, nor with explicit political responsibility with respect to e-government development. Based on these findings, alternative explanations for the adoption and diffusion of personalized e-government services are suggested.

Introduction

Various studies have shown that there has been a steady growth in the presence of electronic government services. The increase has been observed in developed countries (defined as members of the Organization for Economic Cooperation and Development OECD) (OECD, 2009), European countries (Horst, Kuttschreuter, & Gutteling, 2007; Janssen & Rotthier, 2005), the Arab world (Al-Nuaim, 2009) and, to a lesser extent, sub-Saharan African countries (Heeks, 2002; Schuppan, 2009). In the literature, specific attention has been given to electronic government in US (Moon, 2002; Reddick, 2009) and UK (Gilbert, Balestrini, & Littleboy, 2004) municipalities.

Apart from this increase in number of services, in the past decades there have been various 'qualitative jumps' (Bekkers & Homburg, 2005). For instance, Layne and Lee identify various stages of electronic service delivery. They suggest that public sector organizations tend to begin with offering cataloguing information, then shift to isolated transactions, and eventually to enabling horizontally and vertically integrated transactions to citizens (Layne & Lee, 2001).

In this article, we focus on a recent qualitative jump: the move to so-called personalized electronic public services. Personalized services (called 'customized services' by Watson and Mundy) are services with which through authorization, profiling and customization, one-to-one relationships between service providers and users are established (Guo & Lu, 2007; Watson & Mundy, 2001). Delivering personalized electronic government services can be understood as fitting the idea of truly citizen-centric government, an idea that has been at the heart of the New Public Management ideology that has, over the past two decades or so, swept over the American and European public sector and beyond (Pollitt, van Thiel, & Homburg, 2007). Furthermore, citizen-centric government was forcefully put forward in a 2009 OECD study (OECD, 2009). The European Commission stipulated in 2007 that the highest level of sophistication of services is the level of 'personalization'.

The core of this article presents a description of the diffusion of technology-enabled personalization of e-government services among all Dutch municipalities between 2006 and 2009, combined with a more detailed analysis of municipal e-government personalization in the Netherlands in 2008. We explicitly focus on the provider's perspective (e.g., municipalities) as opposed to a citizen-centric perspective on service delivery (Butt & Persuad, 2005). The eventual aim is to explain why some municipalities provide personalized services whereas others do not. In the analysis we seek to explain specific patterns with a binary logistic regression analysis. The focus on municipalities was chosen because municipalities are viewed in many Western countries as the frontrunners in the modernization of interaction between government, on the one hand, and citizens and corporations on the other (Paskaleva, 2008). The focus on a single country, the Netherlands, enables us to demarcate an empirical setting and exclude influences that emerge from national policy initiatives.

The research question of this article is: How can the diffusion of personalization in municipal electronic service delivery in the Netherlands be explained? It is important to theoretically analyze the factors that contribute to and facilitate e-government developments and thereby contribute to the literature on the adoption and diffusion of information technology in the public sector. Until now, few empirical studies have attempted to analyze e-government innovation, and from an analysis of national e-government policy document of various countries, Bekkers and Homburg (2007) have demonstrated that many policy initiatives are inspired by so-called 'myths'. By explicitly confronting one of these 'myths' (the myth of rational planning) with population (as opposed to sample) data of e-government adoption in Dutch municipalities, the phenomenon of personalized e-government is better understood and this might enable local politicians, public managers and e-government project managers to cope with e-government myths in their e-strategy formation efforts and implementation puzzles.

This article is structured as follows. In section two, personalization and personalized e-government services are defined and theoretical and political backgrounds of personalization are identified. The third section discusses data sources and methods used in the analysis. The fourth section presents the results of the analyses. Section five presents conclusions and provides an assessment of the relevant attributes of e-government personalization.

Origins and empirical manifestation of personalized e-government

For the purpose of this study, we define e-government as the redesign of the information relations of a public sector organization with its environment – be it citizens, corporations or other governmental organizations (Bekkers & Homburg, 2005). Although the general definition encompasses information delivery and transactions as well as participatory services, including electronic voting, both in the e-government literature as well as in policy practice, e-government is often narrowed down to electronic service delivery. In this article we also focus on the electronic service delivery component of the e-government phenomenon.

Until recently, electronic services were predominantly presented in a 'one size fits all' manner, presumably reflecting the idea that because many public services are universalistic – meaning that services should be available to each and every citizen – they should be presented in a universalistic way. This mode of public service delivery has been severely criticized. As Leadbeater puts it, "many people's experience is that they are put on hold, kept at arm's length, not told the whole story, tricked by the fine print, redirected to a web site and treated like a number" (Leadbeater, 2004, p. 80). A first attempt to change the situation has been to set up one-stop shops: electronic counters with which horizontally and/or vertically integrated services are delivered to the general public (Layne & Lee, 2001). By borrowing ideas and insights from the marketing literature, especially the concept of personalization, a more radical innovation was considered in order to foster an actual citizen-centric approach to service delivery (Ho, 2002). One of the aspects of such an approach is that contacts are not automatically treated as if they were first

time contacts (Peppers, Rogers & Dorf, 1999), requiring again and again the submission of individual data supporting a request (Allen, Kania & Yaeckel, 2001). By re-using data, traditional personal relationships between public service providers and citizens can be restored.

Key in this line of thinking is the notion of personalization and personalized services (Hanson, 1999; Imhoff, Loftis & Geiger, 2001). Since about 1870, personalization has been studied in the marketing literature. Especially in the 1970s, concepts like segmentation and profiling were given a lot of attention in the context of commercial service delivery (Searby, 2003; Oulasvirta & Blom, 2008). In general, personalization as seen from the lens of marketing concerns itself with learning from customer preferences and past interactions in order to deliver a targeted product or service (Bonett, 2001; Guo & Lu, 2007). In this context, three stages are identified (Vesanen & Raulas, 2006):

- the identification of a target population and recording of interactions between service provider and customer through database integration, list management and data updating – in many cases using customer relationship management applications – in order to assess client behavior and interests;
- the segmentation and differentiation of the target population and profiling of individual customers; and
- the customization (Vankalo, 2004) and delivery of services or products.

These ideas can be applied in part to public service delivery as well. Pieterson, Ebbers and Van Dijk describe personalized e-government as an adaptation of an electronic government service to a single citizen, based on user-related information of that particular citizen (Pieterson, Ebbers, & van Dijk, 2007). Pieterson, Ebbers and Van Dijk claim that personalization could reduce administrative burden and, because personalized, one-to-one communication is generally more persuasive than broadcasted public service announcements, thus increasing citizens' compliance to legal principles and duties implied by law.

A practical example of personalized service delivery is a notification sent by e-mail to a citizen when a passport or driver's license is about to expire. Citizens can also be notified of building permits that have been issued to specific companies or other changes in the built environment in the direct vicinity of their homes. These examples are stated here to demonstrate that there are avenues for personalization in public service delivery, not to argue that all public services should be delivered in personalized ways or that public service providers should necessarily mimic developments in the private sector. In fact, there are striking similarities as well as significant differences between commercial services personalization and public services personalization.

First, in many examples of personalization in market relations between commercial service providers and customers, the provided service itself is customized and

tailored to the preferences and needs of the customer (Bonett, 2001; Miceli et al, 2007; Oulasvirta & Blom, 2008; Karat, Blom & Karat, 2004). Think, for instance, of the way the commercial service of a 'holiday' can be tailored to accommodate a specific preference for type of travel, car rental, lodging, etcetera. In public service delivery, because of sound legal principles, many services possess attributes of universalistic services, even if they are presented to citizens in personalized ways. In practice, personalization of public services implies that services are presented in an order and context that is relevant given the history of interactions and/or follows the logic of 'life events' such as birth and death. The services themselves (birth certificates, for instance) remain universalistic.

Second, more than in the case of commercial service delivery, there are important normative questions with respect to the nature and extent of public authority's 'intelligence' of citizen behavior. In political systems that are at least partly founded on principles of liberal democracy, the recording of needs and assessment of citizens' interests and behavior is highly problematic. Wang, Lee and Wang identify four ways in which misuse of information intrudes into people's lives: improper acquisition of information (i.e., tracking people's usage of municipal web sites), improper distribution of data, spamming and improper storage and control of personal information (no opting out, no means of editing incorrect data) (Wang, Lee, & Wang, 1998). This results in a dilemma between achieving customer orientation, on the one hand, and maintaining a proper distance between government and citizen on the other hand. This dilemma is resolved in practice by putting the citizen in the driver's seat and having the citizen choose the level of accuracy and completeness of the information they provide. In this scenario, citizens themselves have more influence and control over their personal information, and they themselves mark the balance between privacy and citizen orientation in personalized services. But even if citizens are willing to sacrifice privacy in exchange for improved orientation towards needs (Chellappa, 2005), privacy ethics state that information is not to be used for purposes that have not been approved by citizens (Pieterson et al., 2007).

Third, an important, more or less operational aim of personalization of commercial and public services alike is to ameliorate problems of information overload for users of services (customers and citizens, respectively). In practice, one can think of techniques like adaptive presentation of content as means to reduce information overload. More than in commercial service delivery, however, there is an ideological flavor to personalization in public service delivery (Leadbeater, 2004). Leadbeater, for instance, decries bureaucratic mass production and over-centralization for creating information asymmetry between service providers and citizens, irresponsiveness and poor public sector performance. Since the advent of the New Public Management, privatization and liberalization have been introduced so as to ameliorate poor performance of public bureaucracies. Through privatization and liberalization, public services are produced and delivered by placing public assets under private ownership and using market-type mechanisms, such as 'the invisible hand', to produce those services that meet citizens' expectations and needs.

Leadbeater dismisses consumerism and privatization in the same way that he criticizes bureaucratic modes of production and argues that personalization of public services can be used to offset both bureaucratic failure as well as the failure of markets to deliver equitable access to public goods. He argues that personalization can be used to take personal needs, preferences and interests into account within universal, equitable public service delivery, enabling citizens to have a voice directly in the service as it is delivered. That voice, according to Leadbeater, is unlocked only if citizens have a say over when, where, how and to what end a service is delivered. Leadbeater's line of reasoning makes clear that personalization is not only an operational solution to problems of information overload, but also a political choice for a specific mode of production and delivery of public services with which specific rights are attributed and with which the relation between government and citizens may be affected: "(…) we need an approach that gives people a direct voice through the way in which everyday services are actually developed and delivered", concludes Leadbeater (p. 56).

Taking into account the three issues mentioned above, we define personalized electronic services as services with which through authorization, profiling and customization, one-to-one relationships between service providers and users are established (Guo & Lu, 2007; Watson & Mundi, 2001). Authorization here means that citizens have to identify themselves, but also that e-government services should allow citizens to unlock needs, preferences and aspirations. Further, it implies that citizens should be allowed greater opportunities to exercise choice over the mix of ways in which their needs might be met electronically, as well as having a voice in the sense of eventually being enabled to further articulate their preferences.

Personalized e-government service delivery, however, is more than simply an idea that has originated in theoretic analogy (private-sector personalization) and normative debate (a rival to liberalized markets). In practice, many initiatives exist in which personalization plays a role. In Belgium, for instance, the Ministry of Finance has initiated MyMinFin, a personalized e-government service provided by the Tax Authority that enable citizens to not only submit their tax filings electronically, but also to check information and to indicate how they would like to be informed of current and upcoming changes in legislation. Furthermore, in various European countries there are national portals that route citizens' requests to decentralized, personalized websites. Examples of these kinds of portals are the Danish borger.dk, the Estonian eesti.ee initiative, the French mon.service-public.fr website, the Norwegian Norway.no portal, the British www.direct.gov.uk site and the Dutch mijnoverheid.nl site. All the mentioned sites offer more or less customized information from a limited but growing number of sources to citizens.

The anecdotal evidence presented above does not serve to prove that personalization is a necessary next step, nor that personalization of e-government is a problem-free transition. In fact, various obstacles to personalization have been identified in the literature.

First of all, personalization requires cooperation and partnership across various levels of government, as well as the exchange and sharing of information across traditional organizational boundaries. These requirements have proven to be difficult, from a governance (Homburg, 2008) as well as from a technological point of view – e.g. the existence of legacy systems (Pieterson et al., 2007). In practice, various obstacles have been identified. Second, personalization requires large financial investments (West, 2004), and third, public service providers in various countries are still struggling with questions of, for instance, how to deal with legal issues such as digital signatures and Privacy Acts. For a review of these legal questions see Lips, Van der Hof, Prins and Schudelaro (Lips, Hof, Prins, & Schudelaro, 2004).

Description of personalization in Dutch local e-government

In an attempt to move beyond the predominantly case-based or anecdotal empirical evidence of personalization in e-government initiatives, we present here the prevalence of attributes of personalization in a specific jurisdiction, that is, in Dutch municipalities. As many other surveys in the field of e-government research, we use existing survey data. Note that as Reddick has observed, existing survey research on municipal e-government concentrates mainly on International City/County Management Association datasets (Reddick, 2009). The data that are presented here have been extracted from a larger data set (the national Dutch e-government monitor, http://monitor.overheid.nl) that was commissioned by the Dutch Ministry of the Interior and composed by the 'Government has an answer' program committee. The data set consists of all sorts of e-government characteristics of national and regional authorities (Ministries, water boards, provinces, municipalities), and the data are eventually processed and presented as a benchmark, ranking the performance of authorities in terms of presence, quality of e-services, etcetera (for comparable US initiatives and methodology, refer to (McClure & Sprehe, 2000)). For the purpose of this study, the items on municipal electronic personalization were extracted from the data set and processed so as to describe the diffusion of personalization in the population of municipalities. The data set covers all Dutch municipalities in the time frame 2006-2009.[ii] The time frame marks an interval that spans two elections (local elections were held in 2006 and 2010).

In the original data set, various attributes of personalization are recorded.[iii] The first attribute concerns the use of the national Dutch authorization mechanism for e-government services (digital identity, abbreviated as DigiD). Second, there is the feature of sending personalized (customized) e-mail newsletters. Third, the tracking and tracing attribute records whether it is possible for customers to keep track of the processing of a request by the relevant municipal service providers. Payment, being fourth, refers to the possibility of paying on-line for specific services. Fifth, pre-completed forms refer to forms that are presented to citizens and that can be pre-completed using either data from information profiles that have been created by citizens or data from previous visits. Personalized counters, sixth, refer to electronic websites with adaptive presentation of content (based on previous visits

by citizens). The seventh attribute, 'personalized policy consequences', refers to a service that allows citizens to check whether they are eligible for specific benefits, need to pay particular taxes or require particular permits given their circumstances.

Table 1 lists the prevalence of the seven above-mentioned attributes of personalized electronic service delivery by Dutch municipalities in the years 2006, 2007, 2008 and 2009. Overall, in the time frame covered, there is a sharp increase in the offered possibility to use DigiD authentification (from 20.7% in 2006 to 88.2% in 2009) and on-line payment (from 15.9% in 2006 to 80% in 2009). Absolute levels lag somewhat behind, as do growth of possibilities for receiving personalized newsletters, using pre-completed forms, assessing personalized policy consequences and using personalized counters.

(Insert Table 1 here)

Explaining the diffusion of personalization

Following the research objective of this paper, the description of the diffusion pattern is an initial but not sufficient means to explain the diffusion of personalization. The question remains as to how to explain why some municipalities offer fully personalized electronic services, whereas other do not. The answer to this question is particularly difficult to attain since a specific theory on e-government personalization is not available (Pieterson et al., 2007). E-government in general has been studied extensively in the literature (Holden, Norris, & Fletcher, 2003; Moon, 2002; Reddick, 2009), and there are ample theoretical insights that can be used to draft hypotheses. Existing theoretical models, however, are not necessarily capable of capturing and robustly explaining the diffusion of personalization in the target population of Dutch municipalities. In the literature, two candidate explanations are presented:

- The first is Rogers' model of diffusion of innovations (Rogers, 1995). This model explains how innovations diffuse in societies as a whole as a function of characteristics of the innovation itself, types of communication channels, rate of adoption and characteristics of the social system in which the innovation takes place. For the purposes of this paper, the model is less likely to be useful, as it makes use of very general, global characteristics that are often beyond the control of municipal stakeholders (public managers, experts, local administrators and politicians).

- The second is Davis' Technology Acceptance Model (TAM) (Venkatesh, Morris, Gordon B. Davis, & Davis, 2003), an exploratory model of the acceptance of technologies across populations of end-users. In this model, the chance of end-users adopting a technology (in the case of personalized e-government, end-users would be citizens using personalized services) is dependent on the end-user's attitude towards technology (i.e., the

technology's perceived usefulness and perceived ease of use). For the purposes of this paper this model is less useful, as individual citizens' attitude to personalized services is, in the short term, not likely to result in political decisions about whether or not to adopt specific technologies.

In this paper, we seek a mid-level (meso) explanation of why specific local authorities choose to adopt personalized electronic service desks, whereas others choose not to do so. By 'mid-level' we refer to organizational constructs and variables that refer to organizational practices but also to the political intentions and ambitions that are immanent to organizational behavior in public authorities. Such an approach has been proposed by Bekkers and Homburg (Bekkers & Homburg, 2005) but has to date been little studied empirically. The Information Ecology approach acknowledges technological opportunity as an important driving force behind the diffusion of technologies; however, it also stresses that diffusion takes place in specific cultural, political, intellectual and economic environments, in which specific rules, intentions and practices guide (1) the behavior and interactions of human actors and (2) the development, deployment and use of technologies. In the current paper, we focus on a relatively unsophisticated yet robust variable size and three variables that assess political drive behind the deployment of technology in a specific local government context. In order to explain the adoption of personalized e-government services, we identify the following explanatory constructs:

1. City size. In various studies of technological innovation in municipalities, the size of the city or other municipal unit is considered to be one of the main determinants. City size can be regarded as a proxy for organizational size and will eventually be seen as a proxy for organizational resources (members of staff, budget, size of IT department). Various studies have demonstrated that larger governments are more likely to adopt innovations than are their smaller counterparts. For an overview, refer to (Moon & Norris, 2005); see also (Norris & Moon, 2005; West, 2004). With regard to American municipalities, Reddick has hypothesized that populations greater than 250,000 have a positive impact on a municipality's e-government maturation, whereas smaller local governments (with populations under 25,000) are expected to display less developed e-government initiatives (Reddick, 2004). In this study, we identify city size as one of the explanatory variables and identify Hypothesis I: Larger municipalities are more likely to adopt personalization than are smaller municipalities.

2. Political motivation of adoption and rational planning orientation. Another set of explanatory variables is associated with the construct of the 'technological orientation' of municipal government or, inversely, the degree of political driving force behind technological innovation. It has been observed that e-government in general is to be achieved through corporate information planning and project management techniques. Information planning and project management is presented as a question of *setting goals*,

formulating action plans, *allocating budgets and identifying clear roles and responsibilities* (Bekkers & Homburg, 2007). Bekkers and Homburg refer to the idea that planning and management techniques correlate with successful adoption as 'the myth of rational information management'. They present it as a myth because the use of explicit planning and management techniques is proclaimed in the design literature and echoed in various action programs and implementation plans. Existing survey studies tend to explain e-government development in terms of roles of chief information officers (Reddick, 2009), managerial orientation (Moon & Norris, 2005) or other managerial or organizational variables, thus de-emphasizing the inherent political disposition of municipal organizations. The relevance of politics for municipal e-government development, including personalization, stems from aldermen's responsibility towards their City Councils, but also from the normative aspects of a choice for personalization. Furthermore, in the IS literature, one of the dominant predictors for the success of information systems in general is strategic alignment (Preston & Karahanna, 2009). Strategic alignment can broadly be defined as a shared understanding among salient technology- and policy actors about plans, objectives and vision of ways in which technology is put to use (Reich & Benbasat, 2000). The casual interpretation here is that technological innovations have a chance of success only if their value is acknowledged and supported not only by ICT staff (representatives from the technological domain) but also by aldermen and general public managers (representatives from the policy domain). In this study, we focus on general innovation and e-government ambitions formalized in four-year program plans, and on aldermen having explicit responsibility for e-government deployment as proxy indicators for strategic alignment in municipal government organizations. We therefore identify a number of hypotheses. Hypothesis II states that municipalities with explicit e-government ambitions in their four-year program plans are more likely to adopt personalization than are municipalities without these explicit ambitions. Hypothesis III states that municipalities with explicit innovation ambitions in their program plans are more likely to adopt personalization than are municipalities without these explicit ambitions. Finally, Hypothesis IV states that municipalities in which aldermen have explicit authority over e-government development are more likely to adopt personalization than are municipalities where the aldermen do not have this type of authority.

Methodology

In order to explain whether a municipality offers services through a personalized electronic service desk, the extracted data set described above was supplemented with data on size (number of inhabitants, based on Netherlands Statistics data). Furthermore, four-year municipal programs that followed the 2006 elections of all 458 municipalities were first scanned for explicit statements on (1) e-government and (2) innovation. As a next step, in a process of induction and deduction, statements on e-government ambitions, innovation ambitions and authority over e-

government development were systematically coded using axial coding techniques (Strauss & Corbin, 1998). We used the 2008 data because at the time of writing, this was the most recent data set available to us that satisfied the conditions for the regression technique we used.

In order to explain the dichotomous dependent variable (presence of personalized electronic service desk), we used binary logistic regression analysis. In general, logistic regression models predict the probability of an event Y_i (in this case, the probability of a municipality having a personalized electronic service desk) with independent variables that are binary, categorical or continuous (Pampel, 2000). The literature on binary logistic regression presents a number of rules of thumb with respect to the allowed number of independent variables to be used in the model in relation to the number of cases. The rule of thumb with respect to sample size is that there should be no more than one independent variable for each ten cases in the sample, the sample being the number of cases of the smaller category (Garson, 2009). In the 2008 data, there are 105 personalized service desks versus 338 municipalities without personalized service desks, enabling the use of maximum 10 (105/10) independent variables. The data set used thus satisfies this condition.

More importantly, logistic regression requires the absence of multicollinearity. Multicollinearity was inspected using collinearity diagnostics, and since all tolerance statistics are above 0.1 and all VIF values are smaller than 10 – even smaller than 4, a threshold value used by Garson (Garson, 2009) – multicollinearity is a non-issue in the data set (Field, 2009) (see appendix A).

Analysis

To evaluate the hypotheses described in the previous section, the dependent variable 'personalized electronic counter' was regressed against three binary independent variables (explicit attention to e-government, explicit attention to innovation and explicit alderman responsibility) and one categorical variable (size). Size was coded as (1) 0 – 50,000; (2) 50,000 – 100,000; (3) 100,000-150,000; (4) 150,000 – 200,000; and (5) 200,000 inhabitants and above. The results of the analyses are summarized in Table 2 below.

(Insert Table 2 here)

The Hosmer and Lemeshow test of significance of the whole model resulted in a non significant value of 1.52 (df=4, p=0.82), indicating that the model adequately fits the data (which is consistent with the overall chi-square of 32.19, $p<0.01$).

Looking at the hypotheses, we conclude that Hypothesis I is supported by the data. The Wald statistic, which is used to test individual contribution of independent

variables (whether the B coefficient is significantly different from zero, in which case the variable does make a contribution to the prediction of the outcome) is 19.46 (df=5, $p<0.01$). Obviously, there is an overall positive relation between city size and likelihood of adoption of personalized e-government service desks. The odds ratio Exp(B) and 95% confidence intervals for the size categories (using the smallest size category as reference) are reported in Table 3.

(Insert Table 3 here)

The second, third and fourth hypotheses, however, are not supported by the data (see Table 4 for respective Wald statistics and significance levels).

(Insert Table 4 here)

With the summarized reflections on the hypotheses, the final section of this paper re-examines the hypotheses and underlying theoretical considerations, and comments on alternative explanations and novel directions for research and policy recommendations.

Conclusions, discussion and further research

This study examined a recent 'qualitative jump' in the way municipal governments offer electronic services to citizens. The 'qualitative jump' refers to a transition from municipalities offering on-line universalistic services to municipal electronic services that are presented in such a way that they reflect prior visits, histories and known citizens' preferences. Think tanks and expert groups have argued in favor of adopting these so-called personalized e-government services (OECD, 2009), but the topic has already moved from being an abstract idea to a real phenomenon in public service delivery. In this study we described how, in the 2006-2009 time period, Dutch municipalities increasingly featured personalized e-government services.

The theory behind personalized e-government diffusion predicted that city size as well as rational planning and political drive in the form of explicit e-government ambitions, general innovation ambitions and express political responsibility over e-government deployment by aldermen (following the logic of rational planning) are positively associated with personalization. We used binary logistic regression and concluded that size is a predictor of personalization in municipalities but that policy ambitions and aldermen having explicit attention towards e-government do not predict personalized e-government. Below we will look at how these findings should be interpreted.

The fact that size (interpreted as a proxy for a municipality's resources and capacities) is positively associated with adoption is consistent with studies by Moon and Norris (Moon & Norris, 2005) and in general supports the so-called resource-push perspective, a positive association between technical and financial resources and technological innovation (Moon & DeLeon, 2001). Perhaps the more interesting finding of this study is the lack of support for the hypotheses relating ambitions about political e-government and innovation (as expressed in municipal four-year program plans) with the actual adoption of personalized e-government services. Especially in the information systems literature, emphasis has been placed on the alignment of technological initiatives and general policy (or strategic) plans as a predictor of information system success (Henderson & Venkatraman, 1999). The results of this study show that in fact, this top-level policy support does not make a difference in realizing personalized e-government services. Obviously, personalization as an idea is more of an organizational phenomenon driven by managerial logic, capacities and availability of resources than a political phenomenon boosted by political ambitions and drive.

As for practical implications, a number of recommendations come to mind. The first one that stems from the theoretic framework is that personalization is not a solely operational transition to a 'next phase' in public service delivery. There are important normative considerations that must be taken into account. These considerations refer to the view on citizens in general and their assumed 'voice' capacities in particular. The second one is that if one decides to boost personalized e-government services, it should be taken into account that increasing organizational resources and capacities are more likely to promote personalization than are formulating political ambitions and responsibilities. Overall, this implies that the myth of rational e-government can be 'debunked'. The pattern that emerges from the innovation of Dutch municipal personalized e-government is that ICT adoption does not always reflect the realm of method, procedure and systematic reasoning. Alternatively, innovations like personalization are likely the result of the bubbling up of new ideas (tinkering and 'bricolage' (Ciborra, 2002; Bekkers & Homburg, 2007; Homburg, 1999)).

Future research could possibly examine the exact relation between organizational capacities and resources, on the one hand, and adoption of personalized e-government services on the other hand. This type of research could focus on ways in which 'ideas' (Czarniawska & Sevon, 2005; Homburg & Georgiadou, 2009) such as personalization travel from the sphere of think tanks and experts (for example, OECD reports that promote personalization in e-government initiatives) to that of real-world organizations. Using the results of this study, one can hypothesize that these ideas do not simply institutionalize through (1) political ambitions of local politicians and (2) subsequent implementation at the shop floor of municipal service providers. Rather, they might diffuse through organizational 'contact infection' (Homburg & Georgiadou, 2009) and mimicking, for example because of de-facto regulative pressures of benchmarks, normative pressures of professional associations of information managers, or simply because of organizations copying

the developments of neighboring or otherwise associated organizations (DiMaggio & Powell, 1983; Havermans & Woudenberg, 2007). Related to these isomorphic notions is the role of partnerships and networks in the propagation of innovations among similar organizations (Cotterill & King, 2007; Gulati & Gargiulo, 1999). Partnerships and networks, it is found, contribute to the adoption and implementation of e-government initiatives through the sharing of knowledge and expertise among organizations. Closely related to this research is the work from Considine et al., in which they looked at processes of change within municipalities in Australia. They also focused on the importance of networks in the processes of change within these municipalities (Hu, Saunders, & Gebelt, 1997). Here, the importance of networks and contacts between key innovators is found to play an important role in the processes of change and innovation within municipalities. These results give all the more reason to focus on the way these new innovations and ideas travel among and within municipalities and how this travelling is influenced.

Furthermore, this article explicitly takes a provider's perspective on personalization and explains adoption of personalization in terms of characteristics of the provider. Alternatively, an alternative explanation of the diffusion and adoption of personalized e-government could take a citizen's perspective (Butt & Persuad, 2005) by proposing explanatory variables from the side of the citizen, like citizen's express need, expectations, privacy concerns (Chellappa, 2005) and so forth. It must be noted, though, that representative democracies in combination with public hierarchies show longer feedback loops than spot market transactions in e-commerce applications, so that there are ample methodological problems in actually adopting a citizen-centric perspective in explanatory studies.

Another avenue of research activities is to focus on the effects of personalization rather than on the adoption of personalization itself. Especially in the public administration literature there is an implicit hypothesis that personalized e-government services – even more than 'general' e-government services – result in better contacts between government and citizens (more trust in government, improved compliance) (Chellappa, 2005; Montgomery & Smith, 2009; Oulasvirta & Blom, 2008; Wind & Rangaswamy, 2001). The degree to which this actually takes place is an empirical question that needs to be addressed in future research initiatives.

Acknowledgements

The authors thank the Dutch 'Government Has an Answer' program committee for their assistance in disclosing e-government monitoring data, as well as the anonymous referees for their constructive feedback.

References

Al-Nuaim, H. (2009). How "E" are Arab municipalities? An Evaluation of Arab capital municipal web sites. *International Journal of E-Government Research,* 5(1), p. 50-63.

Allen, C., Kania, D., & Yaeckel, B. (2001). *One-to-one web marketing: Build a relationship marketing strategy one customer at a time*. New York: Wiley.

Bekkers, V. J. J. M., & Homburg, V. M. F. (Eds.). (2005). *The information ecology of E-government (E-government as institutional and technological innovation in public administration)* (2nd ed.). Amsterdam: IOS Press.

Bekkers, V.J.J.M., Homburg V.M.F. (2007). The Myths of E-Government. Looking Beyond the Assumptions of a New and Better Government. *The Information Society*. 23(5). Pp. 373-382.

Bonett, M. (2001). Personalization of web services: Opportunities and challenges. *Ariadne,* (28)

Butt, I, A. Persuad (2005). Towards a citizen centric model of e-government adoption. In: ICEG, *Proceedings of the 3rd International Conference of E-Governance.* Pp. 6-15.

Chellappa, R. (2005). Personalization versus privacy: An empirical examination of the online consumer's dilemma. *Information Technology and Management, 6*(2-3), 181.

Ciborra, C. (2002). *The Labyrinths of Information.* Oxford: Oxford University Press.

Cotterill, S., & King, S. (2007). Public sector partnerships to deliver local E-government: A social network study. In M. A. Wimmer, H. J. Scholl & A. Grölund (Eds.), *EGOV 2007* (pp. 240-251). Berlin Heidelberg: Springer-Verlag.

Czarniawska, B., & Sevon, B. (2005). *Global ideas: How ideas, objects and practices travel in the global economy*. Copenhagen: Copenhagen Business School Press.

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review,* 48(2), pp. 147-160.

Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London: SAGE.

Garson, D. (2009). *Quantitative research in public administration.* Retrieved January 27th, 2009, from http://faculty.chass.ncsu.edu/garson/PA765/pa765syl.htm

Gilbert, D., Balestrini, P., & Littleboy, D. (2004). Barriers and benefits in the adoption of e-government. *International Journal of Public Sector Management,* 17(4), pp. 286-301.

Gulati, R., & Gargiulo, M. (1999). Where do interorganizational networks come from? *The American Journal of Sociology,* 104(5), pp. 1439-1493.

Guo, X., & Lu, J. (2007). Intelligent E-government services with personalized recommendation techniques. *International Journal of Intelligent Systems,* 22, pp. 401-417.

Hanson, W. (1999). *Principals of internet marketing*. Cincinnati, OH.: South Western.

Havermans, D., & Woudenberg, B. M. (2007). *Vermenigvuldigen door delen (11 stappen om te komen tot intergemeentelijke ICT samenwerking)*. Den Haag: ZENC.

Heeks, R. (2002). e-government in africa: Promise and practice. *Information Polity: The International Journal of Government & Democracy in the Information Age,* 7(2), p. 97.

Henderson, J. C., & Venkatraman, N. (1999). Strategic alignment: Leveraging information technology for transforming organizations. *IBM Systems Journal,* 38(2), p. 472.

Ho, A. T. (2002). Reinventing local governments and the E-government initiative. *Public Administration Review,* 62(4), pp. 434-444.

Holden, S. H., Norris, D. F., & Fletcher, P. D. (2003). Electronic government at the local level. *Public Performance & Management Review,* 26(4), pp. 325-344.

Homburg, V. M. F. (2008). *Understanding E-government: Information systems in public administration*. London: Routledge.

Homburg, V. M. F., & Georgiadou, Y. (2009). A tale of two trajectories: How spatial data infrastructures travel in time and space. *Information Society,* 25(5), pp. 303-314.

Horst, M., Kuttschreuter, M., & Gutteling, J. M. (2007). Perceived usefulness, personal experiences, risk perception and trust as determinants of adoption of e-government services in the Netherlands. *Computers in Human Behavior,* 23(4), pp. 1838-1852.

Hu, Q., Saunders, C., & Gebelt, M. (1997). Research report: Diffusion of information systems outsourcing: A re-evaluation of influence sources. *Information Systems Research,* 8(3), p. 288.

Imhoff, C., Loftis, L., & Geiger, J. (2001). *Building the customer-centric enterprise, data warehouding techniques for supporting customer relationship management*. New York: John Wiley and sons.

Janssen, D., & Rotthier, S. (2005). Trends and consolidations in E-government implementation. In V. J. J. M. Bekkers, & V. M. F. Homburg (eds.), *The information ecology of E-government (E-government as institutional and technological innovation in public administration)* (2nd ed., pp. 37-52). Amsterdam: IOS Press.

Karat, C. M., Blom, J. O., & Karat, J. (Eds.). (2004). *Designing personalized user experiences in eCommerce*. Dordrecht: Kluwer Academic Publishers.

Layne, K., & Lee, J. (2001). Developing fully functional E-government: A four stage model. *Government Information Quarterly,* 18(2), pp. 122-136.

Leadbeater, C. (2004). *Personalisation through participation. A new script for public services*. London: Demos.

Lips, A. M. B., Hof, v. d., S., Prins, J. E. J., & Schudelaro, A. A. P. (2004). *Issues of online personalisation in commercial and public service delivery*. Nijmegen: Wolf Legal.

McClure, C. R., & Sprehe, J. T. (2000). *Performance measures for federal agencies: Final report*. Washington, D.C.: Defence Technical Information Center.

Miceli, G., Ricotta, F., & Costabile, M. (2007). Customizing customization: A conceptual framework for interactive personalization. *Journal of Interactive Marketing, 21*(2), 6-25.

Montgomery, A. L., & Smith, M. D. (2009). Prospects for personalization on the internet. *Journal of Interactive Marketing, 23*(2), 130-137.

Moon, M. J. (2002). The evolution of E-government among municipalities: Rhetoric or reality? *Public Administration Review,* 62(4), pp. 424-433.

Moon, M. J., & deLeon, P. (2001). Municipal reinvention: Managerial values and diffusion among municipalities. *Journal of Public Administration Research and Theory,* 11(3), pp. 327-352.

Moon, M. J., & Norris, D. F. (2005). Does managerial orientation matter? The adoption of reinventing government and e-government at the municipal level. *Information Systems Journal,* 15(1), pp. 43-60.

Norris, D. F., & Moon, M. J. (2005). Advancing E-government at the grassroots: Tortoise or hare? *Public Administration Review,* 65(1), pp. 64-75.

OECD. (2009). *Rethinking e-government services (user-centred approaches)*. Paris: OECD.

Oulasvirta, A., & Blom, J. (2008). Motivations in personalisation behaviour. *Interacting with Computers, 20*(1), 1-16.

Pampel, F. (2000). *Logistic regression: A primer*. Thousand Oaks CA: SAGE.

Paskaleva, K. (2008). Assessing local readiness for city E-governance in europe. *International Journal of E-Government Research,* 4(4), pp. 17-20.

Peppers, D., Rogers, M., & Dorf, B. (1999). *The one to one fieldbook: The complete toolkit for implementing a 1 to 1 marketing program*. New York, NY.: Double Day.

Pieterson, W., Ebbers, W., & van Dijk, J. (2007). Personalization in the public sector: An inventory of organizational and user obstacles towards personalization of electronic services in the public sector. *Government Information Quarterly,* 24(1), pp. 148-164.

Pollitt, C., van Thiel, S., & Homburg, V. M. F. (Eds.). (2007). *New public management in Europe: Adaptation and alternatives*. Basingstoke: Palgrave Macmillan.

Preston, D. S., & Karahanna, E. (2009). Antecedents of IS strategic alignment: A nomological network. *Information Systems Research,* 20(2), pp. 159-179.

Reddick, C. G. (2004). Empirical models of E-government growth in local governments. *E - Service Journal,* 3(2), pp. 59-84.

Reddick, C. G. (2009). Factors that explain the perceived effectiveness of E-government: A survey of united states city government information technology directors. *International Journal of E-Government Research,* 5(2), pp. 1-15.

Reich, B. H., & Benbasat, I. (2000). Factors that influence the social dimension of alignment between business and information technology objectives. *MIS Quarterly,* 24(1), pp. 81-113.

Roberts, M. (2007). *Internet marketing: Integrating online and offline strategies*. Boston: McGraw-Hill.

Rogers, E. (1995). *Diffusion of innovations* (4th ed.). New York: Free Press.

Schuppan, T. (2009). E-government in developing countries: Experiences from sub-Saharan Africa. *Government Information Quarterly,* 26(1), pp. 118-127.

Searby, S. (2003). Personalisation - an overview of its use and potential. *BT Technology Journal, 21*(1), 13-19.

Strauss, A. , Corbin, J. (1998). *Basics of qualitative research: Grounded theory procedures and techniques*. Thousand Oaks, CA: Sage.

Vankalo, M. (2004). *Internet-enabled techniques for personalizing the marketing program*. Helsinki: Swedish School of Economics and Business Administration.

Venkatesh, V., Morris, M. G., Gordon B. Davis, & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly,* 27(3), pp. 425-478.

Vesanen, J. (2007). What is personalization? A conceptual framework. *European Journal of Marketing, 41*(5/6), 409-418.

Vesanen, J., & Raulas, M. (2006). Building bridges for personalization: A process model for marketing. *Journal of Interactive Marketing,* 20(1), pp. 5-20.

Wang, H., Lee, M., & Wang, C. (1998). Consumer privacy concerns about internet marketing. *Communications of the ACM,* 41(3), pp. 63-70.

Watson, R. T., & Mundy, B. (2001). A strategic perspective of electronic democracy. *Communications of the ACM,* 44(1), pp. 27-30.

West, D. M. (2004). E-government and the transformation of service delivery and citizen attitudes. *Public Administration Review*

Wind, J., & Rangaswamy, A. (2001). Customerization: The next revolution in mass customization. *Journal of Interactive Marketing, 15*(1), 13-32.

About the authors

Vincent Homburg is Associate Professor in the Faculty of Social Sciences (Comparative Public Service Innovation research group) at Erasmus University Rotterdam, the Netherlands. Homburg edited *The Information Ecology of E-Government* (IOS Press, 2005, together with Victor Bekkers) and *The New Public Management in Europe* (Palgrave MacMillan, 2007, together with Christopher Pollitt and Sandra van Thiel) and published *Understanding E-Government* (Routledge, 2008). He has furthermore published over forty book chapters and articles in

national and international journals (among others The Information Society, International Journal of Public Administration, Information Polity) focusing on electronic government and public management.

Andres Dijkshoorn is trainee Research Assistant and Ph.D. candidate in the Faculty of Social Sciences *(*Comparative Public Service Innovation research group) at Erasmus University Rotterdam. His research focuses on the diffusion of personalization in Dutch municipal e-government initiatives. Dijkshoorn has contributed to various books and research reports and has published various papers in national and international conference proceedings.

(Insert Appendices here)

	2006 (n=458)	**2007 (n=443)**	**2008 (n=443)**	**2009 (n=441)**
DigiD	20.7%	56.7%	76.3%	88.2%
Personalized newsletter	16.4%	21.2%	21.2%	N/A
Tracking & tracing	10.0%	16.0%	28.2%	26.5%
Payment	15.9%	42.4%	61.4%	80.0%
Pre-completed forms	N/A	N/A	17.8%	19.1%
- profiles generated by users			2.3%	5.2%
- automated links			10.8%	12.5%
- automated, user-editable links			4.7%	1.4%
Personalized counters (MyGov.nl)	5.2%	14.2%	23.7%	28.8%
Personalized policy consequences	N/A	N/A	19.4%	18.7%
- internal module			7.0%	N/A
- links to existing websites			12.4%	N/A

Table 1: prevalence of personalization attributes in Dutch municipal e-government services

Variables	B(SE)	Significance
Constant	-1.28 (0.20)	0.00
Size[iv]		0.00
50 k-100 k	0.73 (0.40)	0.06
100 k-150 k	2.52 (0.71)	0.00
150 k-200 k	3.19 (1.31)	0.00
>200 k	3.28 (1.22)	0.15
Innovation in budget plan	-0.62 (0.79)	0.43
E-Government in budget plan	0.03 (0.28)	0.89
Responsibility for aldermen	-0.08 (0.34)	0.80
Note: R^2 = 0.10 (Cox & Snel), R^2 = 0.14 (Nagelkerke), chi-square = 32.19 (p<0.01).		

Table 2: Determinants of adoption of personalized e-government counters

Size category	Exp(B)	95% CI (lower)	95% CI (upper)
50 k-100 k	2.08	0.94	4.58
100 k-150 k	12.48	3.07	50.3
150 k-200 k	24.51	1.84	322.45
>200 k	26.62	2.4	295.28

Table 3: odds ratio and their 95% confidence intervals

Hypothesis (independent variable)	Wald statistic	Conclusion
1. Larger municipalities are more likely to adopt personalized counters than are smaller municipalities. (Size)	19.46 ($p<0.01$)	Supported
2. Municipalities with explicit e-government ambitions in their four-year program plans are more likely to adopt personalization than are municipalities that do not have these explicit ambitions. (E-government in budget plan)	0.19 ($p=0.89$)	Not supported
3. Municipalities with explicit innovation ambitions in their budget plans are more likely to adopt personalization than are municipalities that do not have these explicit ambitions. (Innovation in budget plan)	0.61 ($p=0.43$)	Not supported
4. Municipalities that give aldermen explicit authority over e-government development are more likely to adopt personalization than are municipalities where aldermen do not have this kind of authority. (Responsibility of aldermen)	0.64 ($p=0.80$)	Not supported

Table 4: Conclusions with respect to hypotheses

Appendix A: correlation matrix with independent variables

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.219	0.035		6.343	0.000		
	SizeCateg	0.201	0.036	0.358	5.591	0.000	0.728	1.373
	EGovernment	0.000	0.050	0.000	0.003	0.998	0.978	1.022
	Innovation	-0.098	0.124	-0.049	-0.788	0.432	0.769	1.301
	Responsibility	-0.020	0.062	-0.018	-0.323	0.747	0.916	1.091

a. Dependent Variable: PersCounter2008

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	SizeCateg	PolProgramICT	Innovation	Responsibility
1	1	2.542	1.000	0.05	0.05	0.05	0.04	0.06
	2	1.049	1.556	0.07	0.12	0.10	0.31	0.01
	3	0.632	2.006	0.04	0.00	0.14	0.08	0.82
	4	0.449	2.381	0.00	0.83	0.00	0.57	0.09
	5	0.328	2.785	0.84	0.00	0.71	0.00	0.03

a. Dependent Variable: PersCounter2008

[i] Corresponding author

[ii] Note that population size has dropped throughout the time frame covered due to ongoing reorganizations and mergers, particularly of smaller municipalities. This process of upscaling continues on in 2010 (there are currently 431 municipalities).

[iii] Throughout the time interval covered, some items of the questionnaires were added, reformulated and/or dropped. This has resulted in N/A scores in table 1. The wording of the most important item of the questionnaire for the research goal of this paper (personalized counters) has not changed throughout the time interval covered.

[iv] Using the 0 – 50k inhabitants city category as reference category.