SECURE DIGITAL POST IN THE SCANDINAVIAN COUNTRIES

Differences in policies, design strategies and effects

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Abstract.

Digitization of communication between public administration and citizens seems to be a global trend in societies’ developments. The effects of such e-government initiatives depend, however on each country’s particular policy and design decisions. The aim of this paper is to compare the enactment of particular policies in supposedly similar contexts. The comparative case constitutes digital communication between public sector and citizens in the Scandinavian countries. From a grounded approach, we have described the policy, design and effects elements of the three case settings. Our study indicates that apparently similar solutions in comparable contexts may be enacted in rather different ways and have quite different effects. We find that the three countries operate on a scale of coercion from mandatory (Denmark), over nudging (Norway) to voluntary (Sweden).

Keywords: e-government, digital communication, policy, design, effect

1. Introduction

Denmark, Norway and Sweden have rather similar political systems, it is lot of cooperation between them, and they are actively participating in the European Information Society projects. All three countries range very high in most egovernment benchmarks. We would expect that their ICT policies resemble a lot. However, there are a number of differences, related to their specific history and distinct traditions. This is also reflected in their digitization strategies (Kommunal- og moderniseringsdepartementet 2014; Statens Offentliga Utredningar 2010); see e.g. The Danish Government, et al. (2011).

As part of their egovernment plans, the Scandinavian countries aim at digitizing their communication with its citizens and the business sector. There are, however, great challenges in designing and implementing digital communication, often labelled as “digital by default” or “digital first choice” (see e.g. Kommunal- og moderniseringsdepartementet 2014; Statens Offentliga Utredningar 2010; The Danish Government, et al. 2011). The ambitions in all three countries are that citizens and businesses should choose to use digital channels. Although the overall goals in all three countries are similar in that digital communication should be the preferred channel, each country has defined a rather different digital channel strategy. Accordingly, it is highly relevant to investigate these policies and strategies in more detail. We thus ask: why each country has chosen its distinct strategy, how it is implemented and what are the effects of these distinct are in each country? We want to address these questions through a comparative study of strategies and architecture for digital post in the three Scandinavian countries.

1.1 Research framework “From policy to design and effects”

Our study is linked to the body of egovernment research that deal with IT governance and ICT policy/combined with diffusion and adoption studies. The research framework departs from a
simple model for e-government research consisting of three notions: policy, design and effects (Goldkuhl 2012). Central in the model is design process and designed products of e-government artefacts. Design is in this context considered to be a process of policy implementation, following a distinct strategy, where the policy background is seen as essential context to the design process. The third element; the effects are the specific results (of e.g. use) of and corresponding consequences for actors involved. The analysis in this paper will focus on three levels:
1. The national policy level, including identifying goal, legal and organizational measures, but limited to what is relevant for the specific cases.
2. The design level, meaning how digital channel strategy is implemented as e-government architecture and the supporting information infrastructure, including analyzing technical and organizational characteristics, business model, etc.
3. The effect level, comprising citizens’ and public institutions’ responses to the policy and implementation through their adoption, use and the consequences.

Our research framework is depicted in figure 1.

![Figure 1. Basic conceptualization of study domain](image)

Our research questions are:
1. What are main differences in the national IT governance policies and strategies?
2. To what extent have the ambitions and specific goals defined by the overall national policies been fulfilled in national SDP projects?

### 1.2 Research approach and methods

The empirical base for our study is these three national projects: “Digital Post” in Denmark, “Sikker Digital Post” (English: Secure Digital Post) in Norway and “Mina meddelanden” (English: My messages) in Sweden. Other digital post systems in the respective countries will be briefly mentioned; however, these projects constitute the major national initiatives.

Our research approach is thus three cases studies and is on the whole based on a qualitative approach, although some quantitative data are provided. Our approach includes analysis of policy documents, strategies and project descriptions as well as relevant revisions in laws and regulations, etc. We have adopted a sort of “grounded” approach as no specific theories or propositions guided the analysis (Corbin and Strauss 2008). However, we have used a set of factors related to policy and design as show in Table 3 & 4 below in the comparison of our three cases. In addition, we have had interviews with experts from the governments working on these issues along with documents studies. The authors, one from each of the three countries, have detailed insight in this subject matter. This may, however also imply biases in our interpretation of the data collected. The statistics on adoption and diffusion are collection from public available statistics in the three countries.
2. Theoretical perspectives

2.1 Governance models and forms

Weill & Ross (2004) defines IT governance as the specifying the decision rights and responsibilities/ accountability framework to encourage desirable behavior using IT. There are a number of governance forms, and we agree with Brown and Grant (2005) that a universal best IT governance structure does not exist. Enterprises generally design three kinds of governance mechanisms: (1) decision-making structures, (2) alignment processes and (3) formal communications (Weill and Ross 2005). The decision-making structures involve the organizational committees and roles that locate decision-making responsibilities. Alignment processes are management techniques for securing widespread and effective involvement in governance decisions and their implementation. Thus, according to Brown and Grant (2005), one stream of research deals with the decision-making structure. Sambamurthy and Zmud (1999) identify three primary modes of IT governance; centralized, decentralized and the federal mode e.g. centralization, decentralization or distributed forms.

Jansen and Tranvik (2011) have constructed four IT-governance models. The models are (i) an instrumental-structural model, (ii) a cultural-historical model, (iii) a network model and (iv) a market-oriented model. The instrumental-structural model promotes the view that the governance of public (and private) organizations can be understood as a top-down, predictable and controlled process, where top management make decisions about how organizations should be structured based on well-defined goals and policy instruments. Rather contrary, the cultural-historical model assumes that public bureaucracies have long-lasting institutional features that shape administrative behavior. These features are conceptualized as relatively stable norms, values and practices that create a distinct and specific organizational culture without one well-defined decision structure. The network model draws on notion of participative government Peters (2001). This model is characterized by a flatter and less hierarchical organizational structure, and the style of governance is based on consultation, negotiations and involvement. The market-oriented model is based on devolution and decentralization of initiative and responsibilities – and an emphasis on greater individual incentives (particularly at the management level) for delivering above-average results. In this model, the critical management challenge is to define a framework for open, competitive and well-functioning public sector markets. The characteristics of our models in this way:

<table>
<thead>
<tr>
<th>Governance models Features</th>
<th>The Instrumental-Structural Model</th>
<th>The Cultural-Historical Model</th>
<th>The Network Model</th>
<th>The Market-Oriented Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Focus/Rational thinking</td>
<td>Hierarchical, well-defined authority &amp; responsibilities</td>
<td>Institutional traditions Guided by professional interests, consultation</td>
<td>Participatory, mutual influence, negotiations and collaboration</td>
<td>Avoid monopoly, create markets</td>
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<tr>
<td>Structure and Decision-Making/Centralized, top-down approach</td>
<td>Compatibility with existing values</td>
<td>Flexible adaptation</td>
<td>Ad-hoc, performance-driven</td>
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<td>Alignment</td>
<td>Horizontal</td>
<td>Various patterns</td>
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<tr>
<td>Formal communication</td>
<td>Hierarchical and centralised</td>
<td>“Business as usual”</td>
<td>Teams, TMQ, Internal quality management</td>
<td></td>
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<tr>
<td>Management type, Important Means</td>
<td>Management by objectives and return (MBOR)</td>
<td>Pay for performance, no specific</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Policy

3.1 Denmark

The policy papers that regulate digital communication with public sector in Denmark comprise: 1) the national e-government strategy, 2) legal regulations and 3) legal agreements between the
Danish government and subordinate public institutions.

The Danish national e-government strategy 2011-2015: *The digital path to future welfare* (The Danish Government, et al. 2011), underpins a new e-government paradigm. According to Jæger and Löfgren (2010) Danish e-government has developed since the 1990ies from “Danish values” like democracy, citizens’ IT rights, transparency, button-up experimental approaches, citizens’ empowerment and social inclusion, to more centrally controlled e-government, primarily to increase public sector efficiency. The current 2011-2015 strategy carries the slogan that “those that can, must [be digital]” and it is clearly stated that “it will be mandatory to use digital solutions in written communication with public sector” for both businesses from 2013 and citizens from 2014 (ibid.). The coercive strategy is a result of lack of tangible benefits from former e-government strategies. The Danish e-government strategy is defined and driven by the Ministry of Finance.

The Danish Parliament issued the Law about Public Digital Post (The Danish Minister of Finance 2012) with great majority and with no votes against. The Law states that every citizen age 15+ should have a digital mailbox from 2014. A digital message from a public institution is regarded legally as “read” when the message has been sent from the public institution and is accessible in the digital solution and the recipient carries the legal consequences. Citizens and businesses must accept digital communication, but cannot demand digital communication. The public institution can use whatever communication channel it finds appropriate (mail, e-mail, Digital Post, telephone etc.). Citizens can be exempted if they have do not have computer or Internet access, or has cognitive or language challenges. The Legal Notice instructs the public employee to question the application from the citizen and persuade the citizen to not be exempt ( Danish Digitization Agency 2013; The Danish Minister of Finance 2013).

### 3.2 Norway

Norway is a rather sector-oriented and decentralized, but unitary state where the municipalities have autonomy within the national legal framework. One implication is that Norwegian reform processes might be more segmented and sector-oriented than in other countries. The minister for modernization and IT, which coordinates public sector reforms, launched a new digitization program in 2016, focusing on efficiency and user-oriented services, but also on innovation in private sector, continuing former strategies.

The new program is strengthening “Digital as first option” as an overall principle, meaning that “Digital communication is to be the general rule for contact with the public sector. Paper-based solutions will still be an option, but communication will be digital by default” (see e.g. Kommunal- og moderniseringsdepartementet 2014). All citizens and businesses will receive mail from the public sector as certified digital mail, using secure eID for authentication. This principle applies to the whole state sector; while this principle is optional for the municipalities.

Some laws and regulations have been accommodated to allow digital communication (DIFI 2015). Firstly and most important, the Public Administration Act, §§ 15 which secure that digital communication has equal legal status as paper-based. Next, the regulations on electronic communications with and within public administration regulate secure and efficient use of digital communication. It should be noted that new regulation now allows for digital communication and that the citizens have to make an explicit exemption. According to § 9, paper based communication may still be an option for particular types of communication, e.g. individual decisions, prior notice and other messages that are important for legal status of the citizens. On the other hand, the legislation does not allow the citizens the right to claim digital communication in general.

### 3.3 Sweden
The initiative for digital post in Sweden did not come from a political-ministerial level. It was a public authority initiative around 2009: The Swedish Tax Agency, which had extensive communication with tax payers on tax declarations and other taxation issues. The cost reduction for switching to digital post was estimated to be high.

This initiative was discussed within an authority committee for “business set up and operation”, consisting of several public authorities (Statens Offentliga Utredningar 2010). These authorities had become responsible owners of the Swedish national business link portal verksamt.se, which was launched 2009. There was an interest (from the Agency for Economic and Regional Growth and the Swedish Companies Registration Office) to have digital post as an integrated part of this business link portal, but the Tax Agency had a strong incentive in getting one digital solution that covered both citizens and businesses. Instead, a separate digital solution was chosen called “Mina meddelanden” (my messages). The Tax Agency became the responsible key player for this initiative depending on its huge amount of postal items and an appurtenant great interest for a digital solution. It was also considered important to make this to be a national solution.

The development of this joined-up digital communication service has been influenced by different policy statements on e-government development in Sweden. The e-government in Sweden has been governed for several years by the three overall values of simplification, transparency and efficiency. The main slogan has been “as simple as possible for as many as possible”.

Principles for My Messages were codified in an existing statute (SFS 2003). This statute gives the Tax Agency a right and an obligation to provide a public sector digital infrastructure to public agencies (both national agencies and municipalities). However, this statute (or any other) comprises no regulation about obligations for public agencies to use this digital infrastructure. The development of My Messages was seen as one of the main strategic and cooperative digitization projects coordinated by the e-government Delegation. However, the Delegation was also open for multi-channel strategies for communication between authorities and citizens and there was no declaration of a “digital-first” principle. The service is completely optional and allows you to get information from the authorities in a secure digital mailbox instead of paper mail.

4. Digital architecture

4.1 Principles for digital post architectures – certified mail systems

In 1999, the standardization sector of the International Telecommunication Union published the recommendation X.400, which defines the generic system architecture of Message Handling Services, MHS (Tauber 2011). The functional model of the X.400 MHS is illustrated in figure 2

![Figure 2. Systems architecture of the generic X.400 MHS, called CMS (from Tauber (2011))](image)
System (MTS) that contains Message Transfer Agents (MTA) and can connect with User Agents (UA); furthermore Message Stores (MS) and Access Units (AU), which can be devises that convert digital massages to physical mail. Systems that are supposed to substitute for traditional mail must resemble those functions. Thus, we have to build a corresponding electronic infrastructure to provide (digital) certified mail system. Below we will describe how the three countries have designed and implemented such infrastructures and CMSs.

4.2 Denmark

All public institutions can register as sender and recipient. All persons age 15+ are automatically registered as recipients based on their unique person ID (CPR). Citizens can apply for exemption. Citizens can register phone no. and e-mail for notification. Public institutions send messages from various application systems (UAs). The citizen can initiate messages through the UA, which the MTA delivers as a secure e-mail or via a web service to the public institution. There is one authorized MTS-provider (e-Boks A/S). Citizens log on to the UA through the two-level national eID. Authentication is in principle ensured by using the citizen ID. All UAs are certificate based.

The citizen UA consist of the national eID, the citizen portal (Borger.dk) and the Digital Post front-end system. Citizens access the eID with their CPR and a two-level security access. The government has the responsibility of developing and maintaining Digital Post, borger.dk and NemID. Operation is outsourced to private companies. The recipient has the responsibility to provide access to a device that can run the national portals, Internet access and an active eID to be able to communicate with public institutions - or most importantly - to be able to receive messages that may have legal or economic consequences. The government made it mandatory for public institutions to offer Digital Post as a communication channel for citizens already in 2010. There was a follow-up on every public institution by the Ministry of Finance assessing and publishing, which public institutions were “green” or “red” regarding Digital Post. The assessment, however, did not cover, whether public institutions actually could receive messages. A message was sent to 243 public institutions and two thirds had difficulties receiving or answering digitally (Berger and Andersen 2013).

Digital Post was launched in 2010, but by the time the Law was passed in 2012, almost no businesses had registered and less than one of five citizens. From 2012 to 2014, 3.4 Million citizens had to acquire eID and register or apply for exemption. The exemption rules were only published half a year before Digital Post was mandatory for citizens. More than 500.000 citizens were granted exemption.

The Ministry of Finance drove the implementation of the common infrastructure and provided public institutions with guidelines on various issues. Digital Post was implemented in a “big bang” manner and in a very short time period. There was no pilot implementation or standard implementation schemes that covered the entire end-to-end communication. The resulting many variations of the technical implementation hinders exchange of knowledge and increases complexity and levels of error. The Ministry of Finance showed very little responsiveness towards critique, for instance, when it was claimed that the system violated the Public Administration Law (Fribo 2013; Fribo 2014). The Ministry had no jurisdiction to order other public institutions to use Digital Post. The Tax Agency has openly claimed that they will continue using the free e-mail communication (Møllerhøj 2014).

4.3 Norway

The Norwegian CMS is based on a simplified and asymmetric version of the generic MHS model. The citizens that accept to use a digital communication channel are offered the option to choose between two mail boxes: Digipost by Posten Norge and e-Boks by e-Boks AS (the Dan-
A citizen may however interact with public agencies in different ways. The most typical scenario is when a citizen complete a “digital form” available from a public agency, normally by using a secure login/authentication service provided by the national eID. The agency will process the request and the result, e.g. an individual decision, is then returned through the CMS, and in the chosen mail box. If the citizen is registered in the exemption register, a paper-based message shall be sent.

All public institutions have to register as sender in CMS. All persons age 15+ can register as recipients based on their unique person ID, but they do not have to. Public institutions send messages from various application systems (UAs). The system sends an SMS and/or e-mail as notification of an incoming message. If the recipient is registered with exemption, the message is printed by the MTA and sent by regular mail to the address. Citizens have to access their MTS-providers (Digipost and e-Boks) and login by the national eID. All UAs are certificate based.

The Norwegian MTA is completely transparent, as it mainly routes messages to the selected receiver UA. Due to also privacy regulation considerations, the MTA does not process personal data. The sending User Agent integration module is part of the message producing system, and these modules access the Contact and Reservation Register.

4.4 Sweden

Public institutions that qualify can register as sender in My Messages. Businesses (legal entities) and citizens can register, based on their unique business/citizen ID as recipients. Recipients must register a phone no. and e-mail for notifications. Public institutions send messages from various application systems (UAs) to MTA. These messages can be dispatched from these application systems (e.g. case handling systems), using different techniques, into the message transfer system. The Tax Agency is responsible for this architecture and the provision of the main infrastructural components). There are procedures of organizational, contractual and technical affiliation. The specific type of message needs also to be registered. National agencies and municipalities can be affiliated to this message transfer service.

There is one mail-box (“Min myndighetspost” administered by the Tax Agency) that handles only messages from the public sector. Besides this mail-box, there exist at the moment two commercial digital mail-boxes that are certified to distribute messages from the public sector. These other mail-boxes can also distribute messages from organizations outside the public sector. The operators of the commercial mail-boxes are obliged to take no fee for distribution of public sector messages.

A citizen can choose to receive messages from the public sector digitally or by ordinary mail. The digital choice must be an active choice. If no such choice is registered, the default option is ordinary mail. The citizen can also choose which mail-box operator to use for digital post; i.e. the public digital mail-box or one of the commercial ones. It is also possible to choose not to receive messages from some dispatching public agencies; i.e. deselecting some public agency from digital post. The architecture must thus contain facilities to channel messages from public agencies to the registered citizens and mail-boxes. This digital address information is contained in the message transfer address register. Digital post is considered as secure digital communication. The user is notified about new messages in the mail-box through e-mail or text messages.
5. Adoption and effects

This chapter will present the available data on the adoption and use of digital post among citizens, and analyses some preliminary of their effects.

5.1 Denmark

The number of registered citizens and yearly messages are shown in table 1, showing clearly how mandatory e-government boosts adoption and use. By September 2016, 4.26 mill (93%) citizens had registered, while 0.50 mill had exempted.

An evaluation of the Digital Post business case for 2013 and found that public institutions had realized less Digital Post, thus less postal cost reduction than expected, see Berger and Andersen (2014). Since the State budget was reduced beforehand, the authors estimated that public institutions had had a direct deficit of more than 100 Million DKK. The business case was also evaluated for 2014 for local governments and showed again a direct deficit of 38 Million DKK (79 Million DKK in 2013). Especially small business owners were frustrated about the implementation process, the complexity of the solution, and that they had to pay to be supported along with the lack of support resources. Civil servants experienced increased workload with Digital Post due to its complexity, lack of interoperability and the increased demand for assistance from especially vulnerable citizens, see Berger (2014). Civil servants report that citizens lose welfare rights and benefits because they are not able to access Digital Post. Elderly and vulnerable citizens, that depend on public benefits, may also suffer from techno anxiety (e.g. Guldagger 2013). Social workers stated that forcing citizens to be digital worked against their treatment of the client.

The public institution that handles child support started sending confirmation letters in 2013 to single parents in Digital Post. More than 300 single parents did not see the Digital Post, subsequently they lost child support. The Council of Appeal ruled, on behalf of several complaints, that the decision should be reversed (The Council of Appeal on Health and Safety at Work 2014). The turbulence of implementing Digital Post were criticised in Danish media (Henriksen 2015).

5.2 Norway

Some state agencies have offered a simple digital post service to citizens, based on uncoordinated and rather unsecure solutions. The Tax directorate has used the digital mail service offered by Altinn since 2005 to inform citizens about the assessment of taxes. In 2015, 93 % of all tax payer received digital notice from through Altinn.

DIFI, which was mandated to implement the national secure digital mail (CMS), put its first version into operation fall 2014 and has the overall responsible for maintaining and operating the solution. In municipal sector, a common digital mail service has been offered since 2013, based on a solution developed by Bergen municipality in 2011. The Contact and reservation register and Digipost were put into operation late 2014, while e-Boks was available spring 2015. By October 2016, 24% are users of CMS, while 2.3 % are registered for exemption. However, about 90.5 are registered in the CRR, and will receive all “unsecured” digital messages (mail or SMS), but not necessarily by SDP. Other state agencies use their own local mailbox system for unsecure mail.

5.3 Sweden

The existence of the digital infrastructure of My Messages is mandatory. The Tax Agency is the single, obliged provider of this infrastructure. The use of it is, however not mandatory for either public organizations or citizens/businesses. The deployment of this digital post solution in Swe-
Denmark has thus been highly dependent on the interests by public organizations, citizens and businesses. During the last years several overly optimistic predictions have been presented concerning adoption. However, the numbers of sending and receiving users are progressing fairly slowly. By July 2016, there were only 10 national authorities that use My Messages. In 2014 a deployment process started for the municipalities. A pre-study was conducted that resulted in recommendations and guidelines for affiliation to the infrastructure. At the moment there are only few (small) municipalities that use My Messages (out of 290 municipalities in Sweden) vii.

Besides the public sector digital mail-box there exist two commercial ones affiliated to the network. Expectations have been stated of more mail-boxes. In August 2015, there were 260 000 receiving users (citizens) registered to this digital post, and estimated 6-700 000 citizens in 2016. Table 1 below show some data on the adoption of Digital post in the three countries.

Table 1. Adoption of Digital post in the three countries

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<th>Norway</th>
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Table 2. E-government policy attributes for the Scandinavian countries

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*) The adoption rate of SDP in Sweden has not been verified

6. Comparative analysis

The digitization approach of the three Scandinavian countries has proven to be rather dissimilar, which is clearly depicted in the three slogans for the e-government strategies, see below. In this section, we will compare the attributes of the three different e-government approaches related to policy, design and effect.

<table>
<thead>
<tr>
<th></th>
<th>Denmark</th>
<th>Norway</th>
<th>Sweden</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Those than can must</td>
<td>Digital as first choice</td>
<td>As simple as possible for civil servants and citizens</td>
</tr>
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</table>

Figure 3. e-Government strategy slogans for the Scandinavian countries

6.1 Governance and policy

The Danish, Norwegian and Swedish e-government policies can be placed on a continuum from mandatory to voluntary. Denmark exerts a mandatory strategy, centrally controlled by the Ministry of Finance in a much closed manner, primarily seeking central government cost reductions by legal means towards citizens. The citizen is obliged to be able to receive digital communication from public institutions and has the responsibility to access her/his e-mailbox.

Norway, other the other hand exerts a softer strategy; digital communication is the default option, but citizens can still choose to communicate by physical mail. In Sweden, the citizens may choose freely whether the will receive digital mail or not.

The public institution has the responsibility to ensure that the digital message has been communicated and every public institution is obliged to comply with the digital communication strategy. Even softer, the Swedish approach has been developed bottom-up through the needs of public institutions to reduce costs communicating with citizens. This strategy has been that digital
communication should be voluntary and simple to use for both public institutions and citizens. While citizens cannot demand digital communication in Denmark or Sweden, Norway has a more citizen-centric approach, where citizens actually can demand digital communication if this is supported by the individual agencies.

Table 3. E-government policy attributes for the Scandinavian countries.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Denmark</th>
<th>Norway</th>
<th>Sweden</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Centralized, top-down, government-centric.</td>
<td>Centralized, top-down/citizen-centric</td>
<td>Centralized, bottom-up, institution-centric.</td>
</tr>
<tr>
<td>Goals of strategy</td>
<td>Reduce public sector costs.</td>
<td>Efficiency, effectivity and innovation</td>
<td>Reduce public sector costs, improve security.</td>
</tr>
<tr>
<td>Citizens’ rights</td>
<td>Digital by default. Citizen cannot choose to receive</td>
<td>Digital by default but citizens can choose to receive</td>
<td>Digital communication is voluntary. Citizens can</td>
</tr>
<tr>
<td></td>
<td>phys. mail.</td>
<td>physical mail</td>
<td>choose.</td>
</tr>
<tr>
<td>Citizens’ demands</td>
<td>Cannot demand digital communication.</td>
<td>Conditionally yes; if digital com. is supported</td>
<td>Cannot demand digital communication.</td>
</tr>
<tr>
<td>Organization</td>
<td>No official body, no open meetings/public debate. Not transparent</td>
<td>A national advisory body: incl. state directorates and municipal sector</td>
<td>The E-delegation group no citizen involvement, transparency</td>
</tr>
<tr>
<td>Implementation</td>
<td>Rapid, fixed period, specific targets.</td>
<td>Slower, no fixed period, no specific targets.</td>
<td>Digital comm. evolves incremental, dynamic.</td>
</tr>
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</table>

Regarding the implementation process; Denmark has chosen a rapid implementation period, aiming at digitizing 80% of public communication within 3 years and has furthermore reduced central (state) funding of public institutions according to anticipated cost reductions prior to the implementation period. Norway has chosen a softer implementation strategy: public institution should in principle communicate digitally latest April 1. 2016 or explain why they do not meet the deadline. In Sweden, digital communication evolves dynamically according to needs and opportunities.

Our first research question is: What ICT governance models seem to be most dominant in these three countries related to managing secure digital post?

Departing from the characteristics listed in table 1, we find that neither of their governance structure fit into one of these models. Denmark, which has traditionally adhered to a rather decentralized and somewhat softer governance structure, now resembles a centrally controlled e-government. This is in line with Jæger and Løfgren (2010, p 253), claiming that “while in the beginning to be guided by visions based on certain ‘Danish values’ with bottom-up and experimental, the [ICT] policy domain has increasingly become subject to traditional hierarchical control, which has resulted in a more coercive integration of government information systems”, mostly associated with an instrumental-structural model.

Norway has traditionally been rather sector-oriented and decentralized. But during the last 20-25 years, their governance approach has been influenced by New Public Management ideas, and a more instrumental model has been adopted including use of measurable objectives (indicators) and obligatory returns as management instruments and furthermore control processes often supported by the use of ICTs (Christensen and Lægreid 2001). In our analysis of their more recent initiatives as e.g. the Id-portal and SDP projects, we also find elements of a market oriented model, in allowing for competing public private service providers, combined with a somewhat pragmatic, flexible adaptation approach, including negotiation and collaboration as we find a the network model.
In Sweden, however, we observe a quite different trajectory. While their governance approach in the past resembled a rather centralized, hierarchical structure, we find that the present governance is influenced by a somewhat networked approach, aiming at fulfilling the vision of this joined-up digital communication service as a 24/7 agency (Løfgren 2007).

6.2 Design

The design choices may also be partly grounded in the overall approaches of the three countries, depicted in the three slogans above. While exemption for citizens can only be granted in the Danish case if citizens actively meet at town hall and declare that they do not possess a computer, Norwegian citizens can be exempt only by omitting to register their email address. Contrary, the Swedish citizens that want to communicate digitally, actively need to register. For the businesses sector, in both Denmark and Norway, businesses are obliged to communicate digitally without possibility of being exempt.

<table>
<thead>
<tr>
<th>Table 4. E-government design attributes for the Scandinavian countries</th>
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<tbody>
<tr>
<td><strong>How many digital solutions must citizens cope with for different types of messages?</strong></td>
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<tr>
<td>Few other solutions. The Ombudsman has that only one SDP is promoted.</td>
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<tr>
<td><strong>Degree of choice</strong></td>
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<tr>
<td><strong>Exemption for citizens to receive digital messages</strong></td>
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<tr>
<td>Development of digital infrastructure</td>
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<td>Operation of digital infrastructure</td>
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<tr>
<td>Business model, public institutions</td>
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</tbody>
</table>

A recent Danish investigation of user-friendliness of business-oriented digital solutions revealed that big companies find Danish Digital Post (e-Boks) too restricted for instance due to lack of internal operations of messages and lack of role-based user profiles; whereas one-person companies find the solution to complex (The Danish National Audit Agency 2015). The Danish Government decided to delegate authority to the Minister of Finance to authorize one solution, without specifying and publishing the requirements for the solution, for instance regarding security, authentication, confidentiality, reliability etc.

The Norwegian Government has followed a more transparent approach, specifying the requirements in the legal documents. The private company e-Boks A/S (that has operated the Danish MTS since 2010) was authorized in Norway, but had to adjust the Danish version of the solution to be able to comply with Norwegian requirements on functionality and security (Lundström 2014). The Swedish solution lacks requirements’ transparency since the development was an in-house project.

Our analysis shows that the Danish governance approach, mainly characterized instrumental-structural, resulted in a mainly top-down implementation process following a well-defined time schedule. However, their solution, being dependent on one (monopoly) service provider may then be more vulnerable to external changes in a longer term perspective. The Norwegian approach, being described as “softer”, more pragmatic instrumental approach combined with ele-
ments from market model implied a longer project period, and the initial take-up was rather slow. However, during 2016 the implementation process is not far behind schedule. Their solution, including competing service providers may be more robust, including even additional service provider.

The Swedish implementation plan has been quite different; by following a somewhat networked, but uncoordinated pattern has so far resulted in a very slow implementation process. Thus, our findings seem to be in accordance with Hall and Løfgren (2004) “Based on a comprehensive interview survey and a discourse analysis of official documents we can conclude that the new modes of [Swedish] governance have not been efficient tools to accomplish the high ambitions and objectives of the policy”.

6.3 Effects

The three countries have progressed differently in the implementation processes. Hence, a comparison of effects cannot be made directly. The adoption in Denmark developed slowly the first years, as shown in table 1. The majority of public institutions were registered in 2010, however the number of sent messages were low initially, but have increased in the two last years. The Norwegian development resembles somewhat the first years of the Danish implementation process, see also table 1. From 1.4.2016, it is mandatory for all Norwegian public institutions to register, but still a number of State agencies do not meet this deadline. Furthermore, benefits will not be realized if citizens do not register; paper based communication systems have to be kept in use. However, there has been initiated a public campaign to accelerate the adoption rate. Sweden has a fairly slow pace of uptake due to voluntariness. Prognoses of rapid expansions have been presented now and then by the responsible actors, but theses prognoses have always been proven to be overly optimistic and exaggerated.

The direct economic benefits of the Danish Digital Post project has not been officially evaluated, but since the Government has reduced the State funding of public institutions from beforehand, the project has reduced public costs from 2013 to 2015 by more than 800 Million DKK. An evaluation in 2013 found a direct deficit of more than 100 Million DKK due to public institutions not being able to send as many digital posts as anticipated. The Norwegian or Swedish projects do not yet have this automatic reduction of State funding and benefits from the digitization project has not been estimated. However, in the proposal for the Norwegian National Budget 2017, it is suggested to introduce mandatory expenditure cut saving as a consequence of using digital mail.

A recognized problem in the Danish case is that citizens and businesses do not access their digital communication. For instance, the share of non-held mandatory vehicle inspections was raised by 50% when Danish Police started using digital communication and plate-removal of vehicles doubled (Sandal 2015). It is evident that the Danish shift to digital communication has implied cost reduction in public sector. However, civil servants report that citizens perceive both positive and negative consequences, and that some civil servants find the digital service to citizens so poor that they refrain from using it (Berger, et al. 2015). It is still too early to identify economic, organizational or individual impact from digital communication in Norway or Sweden. Thus, it remains yet unclear whether their individual approaches; more citizen-centric and voluntary respectively, can prove that economic benefits may be gained without negative consequences.

Our second research question was: To what extent have the ambitions and specific goals defined by the overall national ben fulfilled in national SDP projects?

Based on preliminary analysis, it seems that the Danish policy did clearly result in a faster implementation process, and the adoption rate for SDP is much higher than both in Norway and Sweden. Norway is however catching up, and planned transition from internal post systems to
the national SDP may be completed during the next year. If their SDP project follows the same trajectory as the ID-portal, it may become a success. The future of the Swedish strategy is still unclear.

7. Conclusions

The continual shift to digital communication in societies is apparent in the three Scandinavian countries. Digital post solutions have been implemented to push communication between public institutions and citizens/business to such digital channels. There are similarities between the three countries, but as has been shown in this paper, there are also significant differences. All three countries are driven by the idea of a “digital first choice”, which means that citizens should primarily use digital means for their communication with the public sector. But when such a “choice” is made mandatory, as in Denmark, there is actually no choice. In Norway, there are policy and infrastructural arrangements to make the use of digital post as a first, but still real choice. In Sweden, there are only non-coercive policy declarations about digital first choice. An infrastructure for digital post has been rolled out, but the strategy is to let public instructions and external users to choose freely how to communicate. To choose digital post in Sweden must be an active choice. So far, we see that this policy has not been successful.

REFERENCES


Berger, Jesper B., and Kim N. Andersen (2013) Digital communication with the public sector: Main results from the study on response and response times in municipalities, counties, State agencies and State departments (Danish): Aalborg University.


Danish Digitization Agency (2013) Guide to local governments to the Notice of exemption of individuals from connecting to the Public Digital Post, etc. (Danish).


Goldkuhl, Göran (2012) From policy to design and effects: A framework for e-government research. 9th Scandinavian Workshop on E-Government, 9-10 February 2012 Copenhagen,
SFS (2003) Regulation on State authorities' application of digitization (Swedish).
The Council of Appeal on Health and Safety at Work (2014) It was wrong to cancel child payment (Danish). In principle decisions, Vol. 2014.
The Danish Minister of Finance (2012) Law about Public Digital Post (Danish).
— (2013) Notice of exemption of individuals from connecting to the Public Digital Post, etc.

See http://www.digst.dk/it%20loesninger/Digital-Post
See http://www.minameddelanden.se/, http://www.minameddelanden.se/mm/digitalpostfranmyndigheter.html
http://www.digst.dk/it-loesninger/Digital-Post/Digital-Post-statistik
https://www.difi.no/rapporter-og-statistikk/nokkeltall-og-statistikk/digitalisering;
http://www.minameddelanden.se/mm/430.html