

How to succeed with multichannel management. A case study of cross-organizational collaboration surrounding a mandatory self-service application for Danish single parents

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Accepted for publication in: Public Administration in the Digital Age

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Abstract: Citizens' use of e-government channels is considered key to achieving savings from the digitization of the public sector. Channel choice studies have found that citizens use multiple channels in a service encounter and e-government channels supplement, rather than replace traditional channels. This interplay between traditional and e-government channels remains to be explained. There is also a lack of empirical knowledge of how government organizations can apply findings from user studies and migrate citizens online while simultaneously reducing traffic through traditional channels. Therefore we present a detailed longitudinal case study of how public authorities collaborated to create a multichannel strategy for a mandatory online self-service application for single parents. After the strategy was carried out there was an increase in the use of the application and a substantial reduction in calls. We offer contributions to the channel choice literature and recommendations on multichannel management to practitioners.

Keywords: *case study; channel choice; e-government; mandatory channels; multichannel; offline traffic reduction; single parents*

INTRODUCTION

E-government is promoted as a means to increase the effectiveness and efficiency of public authorities as well as citizen satisfaction (Chadwick & May, 2003). As e-government channels generally have lower transactions costs than traditional channels, citizens' migration from traditional channels towards e-government channels is regarded as key to achieving savings (The Danish Government, 2011). Literature reviews of the e-government field show that the papers studied lack practical recommendations on how to achieve these benefits (Heeks & Bailur, 2007; Hofmann, Räckers, & Becker, 2012; Madsen, Berger, & Phythian, 2014).

The channel choice (CC) branch of e-government examines how citizens and businesses choose communication channels in a public service encounter and how government organizations can migrate citizens towards the most efficient channels (Pieterse, 2010). The majority of CC and e-government adoption studies have been conducted in settings where citizens have a choice of channels, not in mandatory settings where citizens have already adopted e-government channels.

Thus, the interplay between channels and the continued use of traditional channels among those who have adopted e-government channels remain unexplained (Madsen & Kræmmergaard, 2015; Reddick & Anthopoulos, 2014). Although a strategy to fully integrate government organizations' channels has been suggested (Pieterse, 2010), it has remained theoretical. Conducting such a strategy in practice is complicated as the channels involved are often managed by several organizations. There is a lack of knowledge and practical recommendations for how such cross-organizational collaborations can be conducted (Kernaghan, 2013). We seek to address these gaps by answering the following research question; *how can public authorities successfully implement a mandatory channel strategy, to increase citizens' use of e-government channels and simultaneously reduce the use of traditional channels?*

We present a longitudinal case study (Yin, 2014) of a cross-organizational collaboration surrounding a mandatory online self-service application. By conducting a study among a group of citizens who have largely adopted the e-government channel, we can analyze the multichannel government-to-citizen (G2C) interaction, which occurs in a post-adoption environment and how government organizations carry out multichannel management (MCM) in such settings.

The next section contains a description of the case and the mandatory setting in which our study takes place. This is followed by a presentation of existing literature on channel choice to position the paper, illustrating the relevance of the research question and expected contributions. Then our method for data collection and analysis is presented, before turning to a discussion of our findings in relation to CC literature, and contributions to research and practitioners. Finally, we offer concluding remarks, limitations, and recommendations for future studies.

CASE DESCRIPTION

The Creation of Udbetaling Danmark

In 2012 the new authority Udbetaling Danmark (UDK) (Payments Denmark) was established by the Danish Government and Local Government Denmark. UDK is administrated by the Danish Pensions fund *Arbejdsmarkedets Tillægspension* (Labour Market Supplementary Pension) (ATP). UDK administers 27 billion Euros annually within five public benefits areas previously administrated locally by the Danish municipalities. With the establishment of UDK, the caseworkers have been transferred to five major national centers. One of these centers is co-located with ATP headquarters, where the collaboration described in this paper took place.

The Danish Agency for Digitization commissioned a report by Boston Consulting Group (BCG, 2012) on the economic savings from the digitization of UDK's case work, which indicated that savings will be achieved by an increase in citizens' use of e-government channels, and a simultaneous reduction in information requests on traditional channels. These effects and savings have already been applied in the calculation of UDK's business case. UDK is expected to save 40 million Euro annually through centralization, increased digitization and use of self-service applications (ATP, 2011). An additional 40 million Euros is expected to be saved through the public procurement of the new IT-systems for UDK. In ATP's digitization strategy citizen oriented service processes are prioritized according to:

1. No-touch solutions (full automation)
2. Citizens' use of e-government channels (websites and online self-service applications)
3. Interaction through traditional channels (mainly calls)

In line with these priorities and the Danish e-government strategy (see box 1) citizens are expected to use a web-portal to get information and for conducting transactions with UDK. Citizen-initiated contacts to UDK are mainly conducted on the telephone, while digital post and traditional letters are secondary channels. Counter turn-ups are possible, but rare due to the physical location of UDK.

The Danish e-government strategy 2011-2015

Box 1. The Danish e-government strategy 2011-2015

The Danish e-government strategy 2011 - 2015

Denmark is regarded as one of the leading countries in regards to e-government adoption (European Commission, 2015). It has a population with high level of ICT skills which generally has good access to broadband and frequently use a wide array of online services (Danish Business Authority 2014; Statistics Denmark 2014). The Danish e-government strategy 2011-2015 (The Danish Government, 2011) aims to increase digitization in the public sector. The components, which support this digitization, are under the authority of the Agency for Digitization, but have been outsourced to private companies. Among the citizen-oriented components are:

- **NemID (EasyID)**, a national identification system, which citizens use to identify themselves for online interaction with public authorities and private companies, especially banks.

- **NemKonto (Easy account)**, a bank account which is assigned for payments from the public sector. All citizens and companies in Denmark are required to have a NemKonto.
- **Borger.dk (citizen.dk)**, a one stop service portal that grants citizens access to services from local and national government agencies. Borger.dk is administrated by the Agency for Digitisation, but other public authorities have sub-sections on the portal where they publish their own content. The websites for the benefits UDK administers are located at Borger.dk.
- **Digital post**, an e-mail system, which replaces traditional letters from public authorities and private companies. In November 2014 digital post became mandatory, and Danish authorities have stopped sending traditional letters to the extent possible. Digital post is accessible through Borger.dk and the privately run e-Boks, and requires the user to login with NemID.
- **Mandatory online self-service applications.** According to the strategy, 80 percent of all requests from citizens within 35 areas (including those of UDK) shall take place via self-service applications in 2015. Citizens are expected to use e-government channels instead of calling or visiting a caseworker. Those who are incapable of using these channels can call, or get help at Borgerservice, local service centers run by the municipalities.

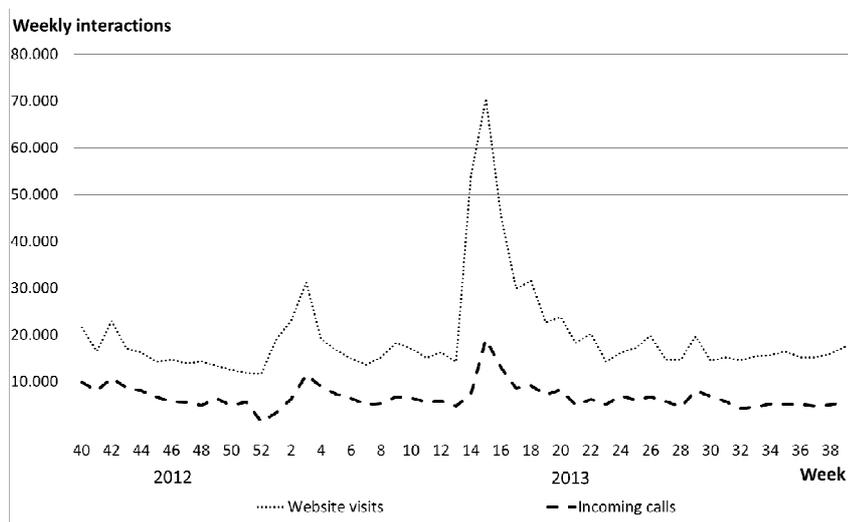
Family benefits and the 2013 single parent's declaration

'Family benefits' is an umbrella term for benefits, which parents with children under the age of 18 living with them are legally entitled to. Single parents can get additional benefits as long as they are not living with other adults under marriage-like conditions. To retain these additional benefits single parents are required by law to declare themselves single annually, and to notify UDK if they are no longer single. When the local municipalities administrated family benefits, they used a paper form for the declaration. UDK had an online application developed for this task. In 2013 UDK sent letters concerning the single's declaration to 119.000 single parents¹. Half of these were sent as digital post while the remaining half was traditional letters. The recipients had to locate the application at Borger.dk, log in using NemID, and declare if they were still single. Those without NemID could call UDK and request a paper form. After five weeks a notification was sent using traditional letters and digital post to those that had not responded. After the second deadline non-responders were regarded as not being single anymore and lost their benefits. Viewed solely in

¹ For reasons of simplicity, all numerical data have been approximated in the following.

terms of adoption rates, the mandatory e-government strategy was successful as 98 percent of all those who responded used the online application.

Figure 1. Citizen-initiated interactions with UDK's family benefit division 2012-2013



However, there were two challenges to the 2013 declaration. The first concerned a surge in calls related to the declaration. Before the letters were sent calls to UDK's family benefit division averaged 6.000 per week (see figure 1). In the two weeks after the letters were sent incoming calls rose to 19.000 and 13.000 respectively. The second challenge concern citizens who were used to getting information from public authorities through traditional letters, and missed the notifications sent as digital post. Those who did not respond subsequently lost their benefits. In December 2013 the Social Board of Appeals ruled that UDK should have informed the single parents about the change in channels and that those who had lost their benefits should have their cases re-evaluated.

CHANNEL CHOICE AND MULTICHANNEL MANAGEMENT

With the diffusion of the Internet and the digitization of the public sector, citizens have new communication forms (channels) to interact with public authorities. Channel choice studies in e-government take place at the individual level, and study the processes surrounding the choice of channels for interacting with public authorities (Pieterse, 2010; Reddick & Anthopoulos, 2014). Multichannel management take place at the organizational level, and concern how government organizations can integrate channels and migrate citizens from traditional towards more cost efficient channels, especially e-government channels, where citizens interact with an online system instead of a case worker.

Reddick and Anthopolous (2014) divide channels for citizen interaction with government into three groups: traditional channels (face-to-face meetings, telephone calls, and surface mail), e-government channels (e-mail and websites), and new digital media (text messaging, mobile apps and social media). We regard online self-service applications as part of the e-government channels. At the individual transaction level, and investment costs notwithstanding, interaction through e-government channels is cheaper to administer for public authorities than communication through traditional channels. Increased efficiency through lower transaction costs are therefore used as arguments for online migration (Kernaghan, 2013; The Danish Government, 2011). Reaping the economic benefits of this migration, however, is a challenge. CC studies have found that e-government channels supplement rather than replaces other channels, and citizens often have several interactions and use several channels per service encounter (Pieterse and Ebbers, 2008; Reddick and Turner, 2012). This shows the importance of regarding the entire service encounter rather than a single transaction when calculating savings from online migration.

Media Richness Theory (MRT) (Daft, & Lengel, 1986) has been used within channel choice studies to explain why citizens and businesses use certain channels for specific tasks (Boer, Pieterse, Arendsen, & Groot, 2014; Ebbers, Pieterse, & Noordman, 2008). Findings show that the e-government channels are preferred for simple tasks such as information searches, but people turn to traditional channels, such as the telephone, when problems arise. MRT explains CC according to the relationship between the richness of a given channel (or medium) and the complexity of the task at hand. MRT classifies media according to their “capacity to process rich information” (Daft & Lengel, 1986, p.560), which is explained by “the medium’s capacity for immediate feedback, the number of cues and channels utilized, personalization and language variety” (Daft & Lengel, 1986, p.560). Face-to-face conversation is regarded as the richest communication form, followed by telephone conversations, and finally documents, from personal, impersonal, to numerical. Tasks are classified according to ambiguity and uncertainty (absence) of the information to be processed. Tasks with high ambiguity require media that offer instant feedback and rich information, such as telephone or face-to-face conversations. In these cases what is needed is not more information, but a decision on how something is supposed to be understood. If a task is well understood, but one lacks information, this can effectively be provided through text. Through this classification MRT offers an explanation of why static websites with text can replace letters, as the level of richness and the lack feedback is roughly the same in the two channels. The telephone provides instant feedback and cannot be replaced by websites unless these present similar feedback through voice or text chat.

MRT has been criticized for its fixed classifications of media from both an organizational and individual perspective. Critics have mentioned that computers and the internet offer a variety of communication forms, which can be both rich and poor (Cai & Jun, 2015). The computer is a meta-medium, which can emulate most previous media forms, and convey text, images, sound and offer both synchronous or asynchronous communication (Kay & Goldberg, 1977). Thus, it is the implementation of channels by an organization, rather than the medium's inherent characteristics, which determine the channels' richness (Cai & Jun, 2015). Channel Expansion Theory has been used to explain how individuals' perceptions of channels can change with experience (Carlson & Zmud, 1999; Pieterse, Teerling, & Ebbers, 2008). In spite of this criticism, MRT has repeatedly proven to be a valuable theoretical framework for CC studies.

The findings reported in previous CC literature mostly relate to the choice of a single channel for individual tasks, not entire service encounters where there can be an interplay across channels (Madsen & Kræmmergaard, 2015). Rebound effects of channel migration such as inquiries through traditional channels concerning online transactions have not been studied. Finally, there is a lack of knowledge of G2C interaction in a mandatory environment. CC scholars have recommended that qualitative methods, such as interviews and focus group discussions, should be applied to study these gaps (Reddick & Anthopolous, 2014; Pieterse, 2010).

At the organizational level MCM focuses on public authorities' vertical and horizontal integration of channels, and how citizens can be migrated from traditional to e-government channels. Field experiments have shown that integrating channels, increasing the quality of e-government channels, and communicating clearly about these channels are effective channel management instruments (Pieterse & Teerling, 2009; Teerling & Pieterse, 2010). These studies have contributed to CC and MCM literature, but still focus on single tasks and individual channels. The gap in empirical studies of entire service encounters and cross-channel interplay can also be observed at the organizational level. Teerling and Pieterse (2011) request longitudinal studies of the effects of MCM instruments.

MCM requires that information is coordinated across multiple channels. These channels are typically controlled by different sections or organizations (Pieterse, 2010). For instance, in Denmark, a national agency is in charge of administering the national web-portal, and various public authorities administer their individual sections at this portal. These authorities also administer other channels, such as the telephone and letters related to their service areas. Further, the individual service areas are often handled by different sections in the organization. Therefore

both inter- and cross-organizational collaborations are required for successful channel integration. Kernaghan (2013) notes that there is a lack of empirical MCM studies, and requests detailed case studies of cross-organizational collaboration. He also suggests that transaction data should be applied by public organizations for MCM purposes.

Although progress has been made in the channel choice field, several knowledge gaps remain. At the individual level there is a lack of knowledge of the interplay that takes place across channels related to entire service encounters, and why citizens who have adopted e-government channels keep using traditional channels. At the organizational level there is a lack of studies of cross-organizational MCM collaboration. Finally, there is the matter of connecting these levels in practice. How can public organizations collect information on citizens' multichannel behavior, and turn this information into a successful MCM strategy? How can the various channels available to an organization be applied to address the needs of citizens? And how would channel traffic be affected if such a multichannel strategy were carried out? We seek to address the identified gaps and answer these questions through a detailed longitudinal case study of a cross-organizational collaboration. At the theoretical level we offer explanations of why citizens who have adopted e-government channels continue to use traditional channels. Further we apply MRT to demonstrate that reducing information ambiguity and uncertainty can be applied to impact CC, and to reduce the need for communication. Finally, we develop a multichannel strategy based on this principle.

METHOD

Case studies are relevant as a research strategy for answering 'how' and 'why' types of research questions, and when an extensive in-depth description of some social phenomenon is required (Yin, 2014, p.4). Further, case studies can be appropriate when dealing with longitudinal or unusual events "over which a researcher has little or no control" (Yin, 2014, p.14). Our case study of how a cross-organizational collaboration was conducted contains an embedded study of why citizens' called UDK regarding the service encounter. MRT is used to inform the study at both the individual and organizational level. The 2013 single parents' declaration represents an extreme case. It was successful in terms of adoption rates, but unsuccessful if one regards the surge in calls and citizen satisfaction. This contrast emphasizes the importance of including contextual information and studying the interplay and total traffic across channels, rather than the isolated use of one channel.

To strengthen the validity of the case study we collected multiple and convergent sources of data (Yin, 2014, p.121). The longitudinal case study can be divided into three stages: (1) the 2013 single parents declaration, (2) the improvement of the 2014 single parents' declaration, (3) the 2014 single's declaration. Different types of data were collected at each stage (see Table 1). Standard qualitative methods such as focus group discussions, individual interviews, and observations, were applied to collect data on single parents perception of the declaration process. Physical artifacts such as the self-service application itself and UDK's letters were also included.

This case study data was classified and analyzed in two steps. First the data was classified through open coding to find to the problems which caused single parents to call UDK (Strauss & Corbin, 1990). These problems were analyzed to find solutions for how the uncertainties that caused calls could be reduced. In several cases the solutions, such as providing receipts, and changing words in the application, were offered directly by the participants. Minutes from meetings, e-mails and personal notes were used to document the collaboration. Statistics on calls and use of the self-service application allow for a comparison from 2013 to 2014. Table 1 presents the case study data.

Table 1. Case study data

Stage	Evidence type	Source	Time frame
1.	Documentation	Call statistics to UDK family benefits, statistics on use of the self-service application	Spring 2013
	Interview	Five focus group discussions with 28 single parents who receive family benefits	
	Physical artifacts	Website, self-service application, letters	
2.	Participant observation	Active participation in meetings regarding 2014 single parents declaration	Spring – Summer 2014
	Letter testing	Presentation of new letters to single parents to ensure that the letters are easy to understand	
	Interview	Interviews with single parents from focus group discussions and additional letter testing	
3.	Documentation	Call statistics to UDK family benefits, classification of calls, statistics on use of the self-service application	Fall 2014 – Jan 2015
	Physical artifacts	Website, self-service application, letters, receipts	
	Documentation	ATP's and UDK's Newsletters on collaboration	
	Participant observation	Participation in evaluation meeting	

IMPROVING THE SINGLE PARENT'S DECLARATION

This section presents the collaborative efforts to integrate channels and reduce calls in chronological order following stages two and three outlined above.

Stage 1. Identifying problems related to the 2013 declaration

In February 2014 a cross-organizational group was established to solve several technical and administrative problems regarding the single parent's declaration. The group consisted of six employees from ATP, and two from UDK. The employees from ATP included the manager for family benefits and five others responsible for the technical aspect of the self-service application, communication, legal requirements, and contact with the IT suppliers and the Agency for Digitization. A call section manager and a representative of the caseworkers represented UDK.

The three primary reasons for calls concerned navigation, receipts and attempts of declaration on via the telephone. A fourth problem concerned the single parents who had missed their digital post, as previously mentioned. In 2013 there was no system in place for classifying calls to UDK. Knowledge of why people were calling was gained through UDK employees and qualitative user studies. These studies suggested that part of the solution to reducing calls was to improve communication, especially the content of the letter. The application itself was described as being easy to use, and many approved of it becoming digital, as they could complete the task at home when they wanted to. A few mentioned the lack of support for mobile platforms. This was not a critical issue but it would make the process more convenient. Those who read digital post on a tablet or smartphone could reply instantly if the self-service application supported these platforms.

Navigation on the portal Borger.dk was repeatedly mentioned as problematic. One explanation was the respondents' low frequency for visiting Borger.dk. The management of family benefits is mostly automated, and the respondents only visited the website when something was wrong, or a change in their lives affected their benefit eligibility. The 2013 single's declaration was the first that relied upon an online self-service application, so the respondents had to learn how to find and use it. The 2013 letter did not specify where at Borger.dk the application was located. The family benefits subpages did not contain links to the application, meaning that only visitors who entered through the front page saw the link.

Sten (M47): The blue line on the floor was missing, like in the hospital, where are we going?

Tanja (F41): *I had to call them for guidance [on how to find the declaration].*

Lack of feedback created uncertainty if the declaration process was successfully completed. When the 2013 declaration was completed an image appeared saying: “*The declaration has been sent to Udbetaling Danmark and will be processed*”. No receipt was offered, and there were no options to save or print the image. Poor communication enhanced this uncertainty. Several respondents picked up on the ambiguity in the application’s text which read: “*the declaration was sent to UDK*” not “*received by UDK*”. This caused many to call to make sure the task was solved.

Tom (M45): *Well I think the problem was that once you’ve sent it, you don’t get any confirmation that it has been received. (...) I don’t know, is it okay or not? (...) It would better if you got a confirmation saying it has been received.*

The 2013 letter contained instructions to go to Borger.dk, but many called to declare themselves single. The callers were instructed to use the self-service application. Those that lacked NemID were sent a physical form, those without Internet access were instructed to go to a civil center or local library and use the computers there.

Many calls regarded several of these issues. Typically, a citizen would sit in front of her computer, call UDK for directions to the self-service application, fill in the information, and then get a confirmation that UDK had received the declaration before hanging up. Others would call repeatedly, first requesting the location of the application and then asking for a receipt.

Stage 2. The efforts taken to improve the 2014 declaration

The group set out to improve the communication across all channels to guide citizens towards the online application, and reduce calls. The changes made can be divided into two groups; improvements of the information presented, which are summarized in table 2, and the addition of new channels to the single declaration process, which are summarized in table 3.

Table 2. Channel specific solutions related to poor communication

Problem	Solution		
	Letter	Website	Online application
Citizens missing declaration		Links on front page and family benefit subpages to the application	

Navigation	Short URL to the application	Links on front page and family benefit subpages to the application	
Attempts to declare on phone	Text specifying that declarations have to be done online, and not on phone		
Uncertainty regarding completion of task	Describes what the application says when task is completed	FAQ explaining how to get a receipt	Receipt page Improved text Print & save option

The letters regarding the single’s declaration were re-written from scratch. An effort was made to write the letter from the citizens’ point-of-view, and to be as explicit as possible about what the citizen had to do, how this was to be done, and when the task was completed. Several iterations of the letters were written in an attempt to reduce any uncertainties or ambiguities. Changes were also made to the form of the letter; the font size was increased, bullet points were used for instructions, and headlines formulated as questions from the citizen to UDK such as “*What do I have to do?*” were added in bold text to structure the letter. Text regarding legal requirements was moved from the first to the second page of the letter to enhance clarity. The changes concerned:

- **Call to action.** A new headline instructing the citizens to declare if they are still single.
- **Navigation.** Instructions and a short URL for how to access and use the online application.
- **Receipt.** A section on what the application says when the declaration process is completed and UDK has received the declaration, to let the citizens know that their task is done.
- **Consequences of non-action.** A section explaining what happens if citizens do not respond within the given deadline.
- **Instructions on calling.** A section explaining that citizens could call UDK about the application, but which specified that they could not call to declare themselves single.

Similar changes were made to the letters for those who missed the first deadline, and to non-responders. The letters were tested at ATP by four single parents who worked at ATP or were relatives of ATP employees, and again during the first author’s follow up-interviews in the homes of four single parents. The purpose of the tests was to ensure that the participants understood what was required of them, where the self-service application was located, and when the task was

completed. The single parents preferred the new letters and appreciated the changes in both text and form. After the tests a few minor adjustments were made; the instructions were written in bullet points, and the respondents were informed that they needed NemID to login.

Sanne (F45): *But this one [2014] has a nice guide in it, which tells me what to do, right? This one [the 2013 letter] just told me to go digitally to Borger.dk, and where I was messing about, right? (...) This one [2013] seems like somebody has just quickly written it and sent it. While this one [2014] seems more worked through than this one [2013]. (...) The text is bigger, that also matters.*

The image and link to the application from 2013 were reused at the front page of Borger.dk in 2014. In addition, every subpage on the family benefit section at Borger.dk was updated with links to the application. An employee from the Agency for Digitization’s division of borger.dk was on stand-by the first days after the letters were sent, in case any sudden changes had to be made to Borger.dk.

The self-service application underwent several changes to make it compliant to the Agency for Digitization’s guidelines for self-service applications. It was made accessible from mobile devices and Mac computers. The wording was harmonized to correspond with the letter. Changes were made to the page shown after declaration is completed to provide immediate feedback and ensure that the task is completed. The text read: *“UDK has received your declaration and will process it. You are not supposed to do anything else”*. An option to save or print a receipt was also added.

Table 3. The addition of new channels to the 2014 single declaration process

Problem	Solution		
	Telephone	Digital post	Traditional mail
Citizens missing declaration	Message for incoming callers		Notifications sent after first deadline
Navigation	Message for incoming callers		
Attempts to declare on phone	Message for incoming callers		
Uncertainty of task completion		Receipt sent upon task completion	

To create awareness and guide citizens towards the online application, a message was played to incoming calls to UDK’s family benefit division saying that declarations should be done online and informing about the location of the self-service application through a short URL. Following the

experiences from 2013 and the rulings of the Social Board of Appeals it was decided that for the 2014 declaration notifications for those who had missed the first deadline would be sent by traditional letter, rather than digital post. Further, upon completion all those who had signed up for digital post would receive a receipt stating that UDK had received their declaration.

Stage 3. Channel traffic for the 2014 single parent’s declaration

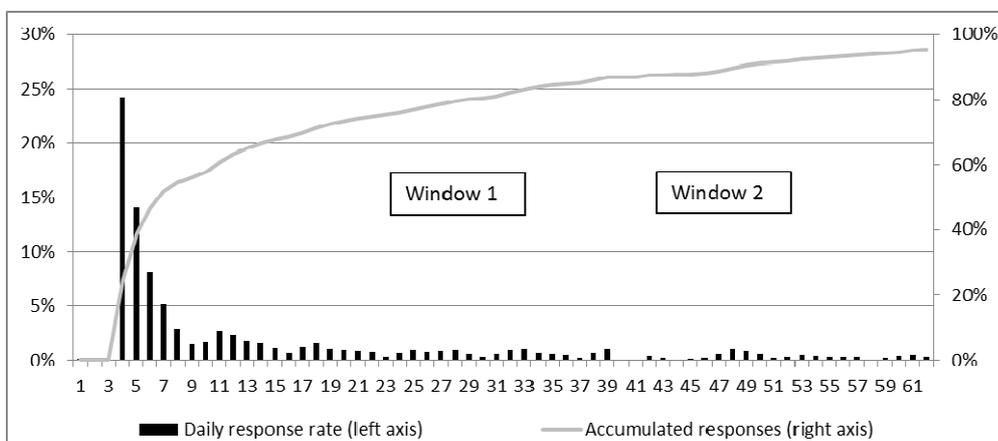
In 2014 80 percent of the single parents received the letter concerning the single parents’ declaration as digital post compared to roughly 50 percent in 2013. The 2014 declaration process followed a similar schedule to 2013. The declaration period was divided into two periods. After the first six weeks (Window 1) a notification letter was sent to non-responders. Three weeks after this (Window 2) the online application was closed.

Table 4. Declarations sent via the online self-service application and on paper 2013-2014

Year	Online Window 1	Online Window 2	Online total	Paper total	Response rate total	Respondents
2013	69 %	11%	80 %	2 %	82 %	119.000
2014	87 %	8 %	95 %	1 %	96 %	122.000
Change	26 %	- 27 %	19 %	- 50 %	17 %	2 %

Table 4 shows the declarations sent through the online application and on paper in 2013 and 2014. As the amounts of respondents differ, the declarations are shown in percentages to allow for comparison. There was an increase in both response rate and response speed from 2013 to 2014. Figure 2 shows the daily (left axis) and accumulated (right axis) response rates in 2014. Comparable data for 2013 are not available.

Figure 2. Response rate for the 2014 single parents’ declaration



Almost one third of the single parents who received the letter as digital post (close to a quarter of all the recipients) responded the same day as digital post was sent. Several factors can have contributed to the faster reply rates compared to 2013; a larger share of the single parents received the letter as digital post, the letters contained links to the declaration, and in 2014 it was possible to access the application using Apple platforms and mobile devices. Learning is also a likely factor, as this was the second year the declaration was conducted online.

Table 5. Calls to UDK family benefit division during declaration period

Year	Calls Window 1	Calls Window 2	Calls in total
2013	64.000	20.000	84.000
2014	37.000	15.000	52.000
Change	- 42 %	- 25 %	- 38 %

Table 5 compares incoming calls to UDK’s family benefit division from 2013 to 2014. From 2013 to 2014 the amount of incoming calls fell by nearly 40 percent. The drop in calls is biggest in the first declaration period, especially in the first two weeks after the letters were received. Incoming calls were reduced by 66 percent compared to 2013. This is especially interesting as two thirds of all single parents used the self-service application during these two weeks in 2014. The head of UDK’s family benefit section estimated that one third of the calls received in April 2013 concerned the single’s declaration. According to the call classification system, this dropped to approximately 10 percent in October 2014. Although a direct comparison to 2013 is not possible, there seems to have been a decrease both in the total amount of calls, and in the share of calls on the declaration.

DISCUSSION

Previous CC and MCM studies have taken place in non-mandatory settings, often with the aim of migrating citizens from traditional to e-government channels. This migration has been regarded as a goal in itself, based on assumptions of efficiency gains. The novelty of our study is that it takes place in a mandatory setting, where almost everyone uses the e-government channel. This allows us to change focus from adoption to post-adoption processes. Our main findings are:

- Mandatory e-government has led to high adoption rates. For the single declaration the e-government channels are the primary channels, while the telephone is the secondary channel.

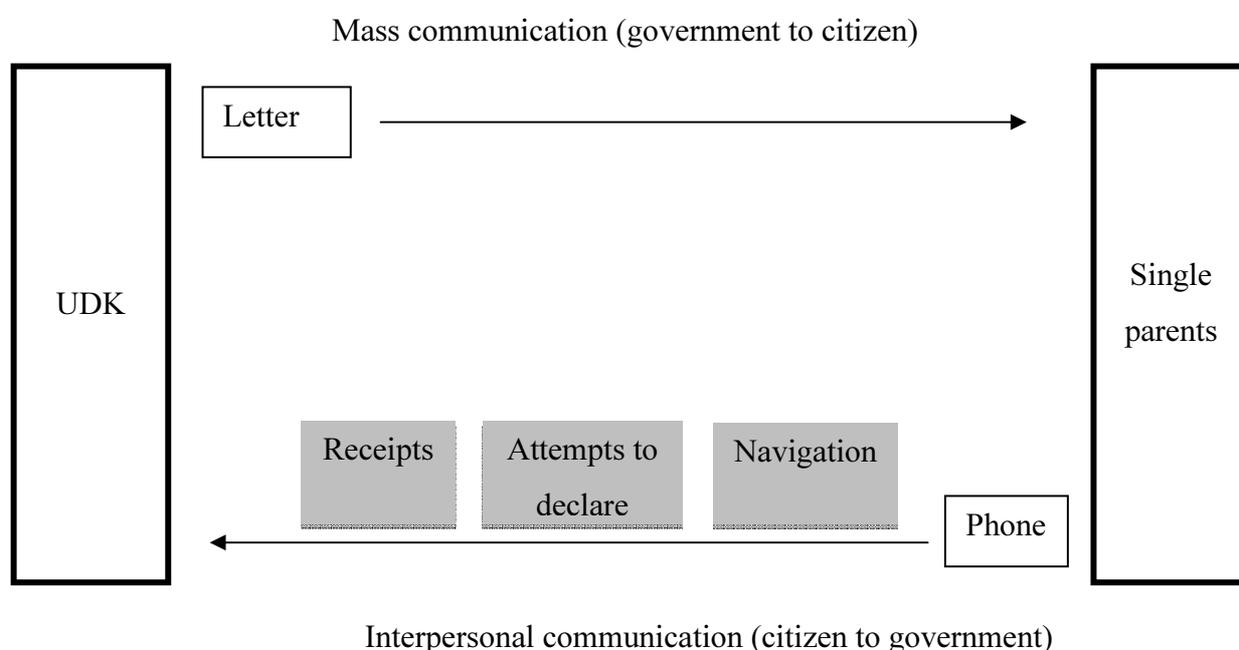
- However, increased use of e-government channels does not in itself ensure efficiency gains, as many keep using traditional channels.
- Poor communication surrounding e-government channels can create rebound effects in the shape of increased information requests via traditional channels.
- Improved quality of information, the addition of new channels, and the utilization of e-government channels' interactive features are powerful tools to reduce calls.
- MRT can be expanded from explaining channel selection to explaining how the need for communication can be limited by reducing information uncertainty and ambiguity.

Transaction data show that the Internet has become the primary channel for single parents' interaction with UDK. The telephone has become a secondary channel, but is still used when problems arise. This is interesting as previous studies (Kernaghan, 2013; Lamberti, Benedetti, & Chen, 2014; Pieterse & Ebbens, 2008; Reddick, 2010) found that traditional channels were used by a higher share of the population than electronic channels. This development might be explained by the change in setting; our study takes place in another country where e-government channels are mandatory, several years after most of the previous studies were conducted and concerns a simple task. Moreover, most Danes have access to broadband, the population has one of the highest levels of IT-skills in Europe (European Commission, 2015), and most of the public digital components which UDK relies upon have been implemented. This foundation was an advantage as it allowed for improving an existing infrastructure rather than developing new solutions, e.g. most participants knew that interaction with public authorities took place at Borger.dk. Improving the existing application and the communication surrounding it was a much smaller task than creating a new application and awareness of it from scratch.

The migration was not voluntary; e-government channels are mandatory for citizens' interaction with public authorities in Denmark related to 35 areas. Our participants did not object to the digitization of the single's declaration, in fact, many approved of it. They complained about having to annually declare themselves single and the communication surrounding the self-service application. However, Danish parents, single or not, with children living at home, generally have higher access to IT and better IT skills than the general population (Statistics Denmark, 2014). It is uncertain whether the lack of resistance to digitization can be generalized to other benefit areas such as pensions, where the recipients have lower IT skills. More complicated tasks might also be met with more resistance.

Although the majority used the self-service application in 2013, this did not stop calling. As suggested by CC scholars (Reddick and Turner 2012; Teerling and Pieterse 2010) we applied qualitative methods to gain insights from the citizens' point-of-view into why they were calling. We identified three issues; navigation, knowing when the task was completed, and attempts to circumvent the mandatory requirement. Figure 3 illustrates offers an explanation to the cross channel behavior. UDK sent a letter to single parents concerning the annual single's declaration. Lack of information, missing feedback, and ambiguous wording caused calls, as shown in the grey boxes.

Figure 3. Causes of calls regarding the 2013 declaration

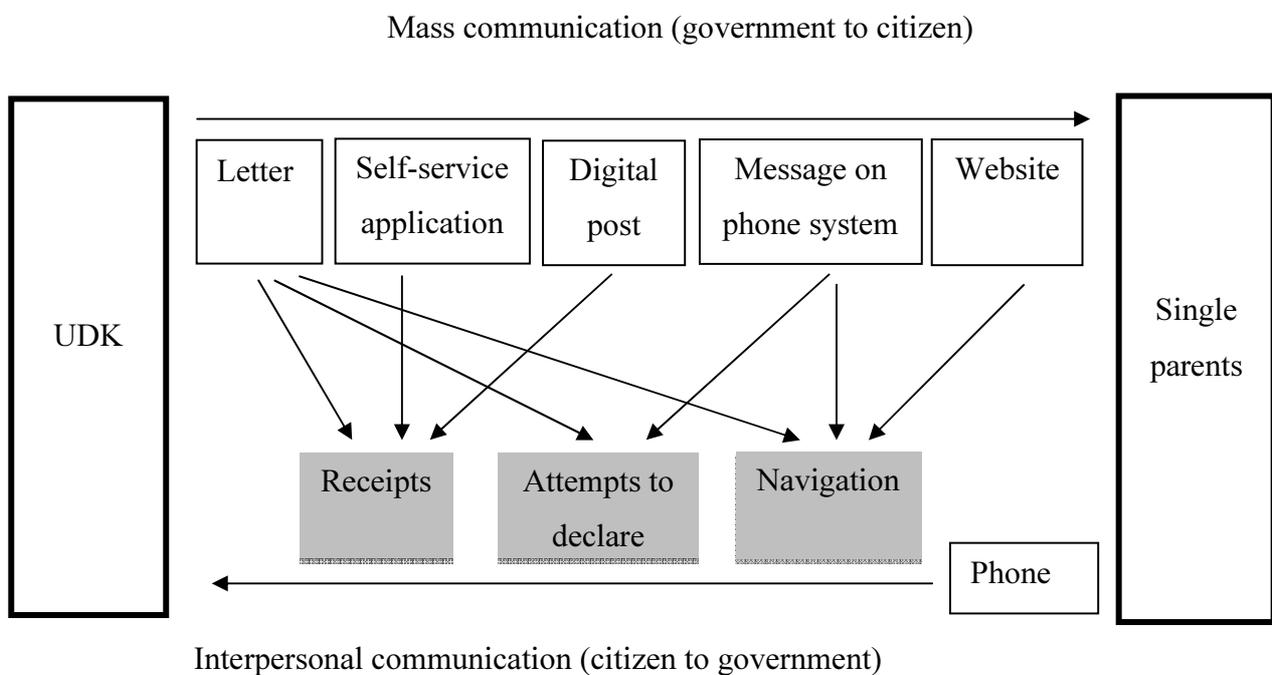


The cross-organizational collaboration attempted to reduce calls for the 2014 declaration by addressing these issues. The efforts undertaken can be divided into two groups; improving communication on existing channels, and adding new channels to the overall service encounter. Communication efforts were developed based on empirical data to increase the use of e-government channels while constraining the use of the telephone. Channel integration and migration was achieved by harmonizing the language and increasing references across channels. The letters were tested repeatedly to weed out any ambiguities. The improvements concerned both the quality and the quantity of the communication. A final aspect concerns better utilization of the interactive features of the e-government channels by presenting a receipt to the single parents upon completion

of the task. Some of these improvements, such as improved texts in letters are relatively cheap to implement, whereas others such as the redesign of the self-service application are more costly. However, in our case the reduction of telephone traffic entails increased costs on other channels.

According to MRT people choose communication form based on their information needs (Daft, & Lengel, 1986). Our case demonstrates that it is possible to reduce the need for communication by presenting the required information up front and reducing its ambiguity. The three issues were addressed repeatedly across several channels to make sure the single parents received the information. Figure 4 presents a pre-emptive channel positioning strategy; an effort to reduce calls by addressing issues known to cause calls through improved mass communication.

Figure 4. The pre-emptive strategy employed to reduce calls regarding the 2014 declaration



The substantial reduction in calls regarding the single's declaration and the responses to the improved letters indicate that the strategy was successful. However, UDK still received calls regarding the issues addressed in the multichannel strategy. Further, even though efforts were made to make the letters easy to understand, people still interpret texts differently. Finally, some have difficulty reading or have another native language than Danish. Telephone requests cannot be entirely removed, no matter how simple the task is. There will always be complicated or unforeseen cases where citizens need to call, and where calling might be the most efficient. However, the case

suggests that user involvement, harmonization and simplification of language, and integrating channels through links and automated messages are powerful instruments for call reduction.

Our study took place in a mandatory setting, but we believe that the efforts could produce results in non-mandatory settings as well, and in both public and private organizations. We therefore offer the following recommendations to researchers and practitioners.

Recommendations to researchers

- Efficiency gains do not come from increased use of e-government channels in itself, but from an overall reduction in traffic, especially on traditional channels.
- Thus, studies of e-government adoption and CC, should take the entire service encounter into account, and MCM studies should focus on the overall effects on the total volume of traffic.
- Usability studies and tests should not just be limited to the e-government channel, but cover the entire service encounter, and all information presented across all channels.
- Our case suggests, that a digital channel's level of richness is not fixed, but can be increased both by implementing interactive features and by changing the tone in the content provided from a traditional bureaucratic to a citizen oriented style.

Recommendations to practitioners

- All involved parties should make an agreement regarding costs and revenue sharing before embarking on a multichannel collaboration.
- Include caseworkers in multichannel projects. They have vital insights into the concerns of the citizens, and their cooperation is required to ensure the validity of call classification.
- Measure the total volume of traffic across channels, not just the e-government channels. Collecting channel traffic data needs more attention in a cross-organizational setting, where actions taken by one organization can have large consequences for overall channel traffic.
- Classify incoming calls according to topic. Conduct user studies to supplement this quantitative data with qualitative studies that offer explanations to citizens' channel behavior.
- Guide citizens from traditional to e-government channels through links (short urls preferably), and automated messages. Harmonize wording and use the same terms for key concepts across all channels to reduce uncertainties and create a coherent experience.

- Improve the wording in texts by explaining tasks from the citizens' point of view rather than the organizations'. Emphasize what citizens are required to do, and how and where to do it.
- Utilize the interactive features of the e-government channels to provide instant feedback and receipts to ensure that citizens know when they have completed their tasks.
- Conduct user tests of the entire service encounter, including applications and surrounding communication, across all channels.

CONCLUSION, LIMITATIONS AND FUTURE STUDIES

We initially asked how a government organization can successfully increase the use of e-government channels and simultaneously reduce the use of traditional channels. To answer this question we have presented a longitudinal case study of UDK and the cross-organizational collaboration undertaken surrounding a mandatory online self-service application.

We found that the mandatory migration of citizens towards e-government channels can create rebound effects, in the shape of information requests through traditional channels. Cross- and inter-organizational collaboration was required to reduce these requests as the channels involved were controlled by several organizations. The continued use of the telephone in relation to the single parents' declaration was related to poor surrounding communication, not the use of the application in itself. Through qualitative user studies and case worker involvement three causes of calls were identified. An effort was made to pre-empt further calls by improving the communication concerning these issues, and by including new channels in the service encounter. The aim was to create a seamless process and reduce the ambiguity and uncertainty that had previously caused calls. The 40 percent drop in calls from 2013 to 2014 and the increase in both the reply rate and speed indicate that the efforts have been successful.

At the theoretical level our findings contribute to CC studies by suggesting that reducing information ambiguity and uncertainty, not only affects channel choice, but can reduce the need for communication altogether. Another important finding is that public agencies are not monoliths, and MCM might entail additional costs to one section or organization, to achieve savings elsewhere. There are particular circumstances to the study presented here. It is a single case study, regarding a simple task, for a highly skilled group of citizens in a mandatory setting. Furthermore, the channels surrounding the single's declaration are managed by different organizations, which affect the statistical data collection. Some statistical systems did not exist in 2013, while others have been

affected by actions of other parties. As many of the single parents had carried out the same task the previous year it is likely that some of the reduction were caused by learning. It is likely that the technical improvements to the application also influenced the reduction in calls.

Due to the changes being implemented simultaneously and in a live setting, and lack of comparable data, it is not possible to isolate or determine their individual effects. Future studies could test each improvement in isolation to determine their effect. This case took place in a country where e-government channels are mandatory within 35 areas, and with a target group with high IT-skills. Future studies could be conducted in other countries, with different services, target groups or organizations, and non-mandatory channels. Such a cross-case comparison would allow for greater analytical generalization, and contribute to moving the field further forwards.

REFERENCES

- Boer, Y. Van den, Pieterse, W., Arendsen, R., & Groot, M. De. (2014). Source and Channel Choices in Business-to-Government Service Interactions: A Vignette Study. (M. Janssen, H. J. Scholl, M. A. Wimmer, & F. Bannister, Eds.) *Electronic Government: Proceedings of the 13th IFIP WG 8.5 International Conference, EGOV 2014*. Dublin, Ireland.
- Cai, S., & Jun, M. (2015). Relationship between Information Richness and Exchange Outcomes: Moderating Effects of Media Richness and Governance Mechanisms. *International Journal of Information Systems and Supply Chain Management*, 8(1), 1–21.
- Carlson, J. R., & Zmud, R. W. (1999). Channel expansion theory and the experiential nature of media richness perceptions. *Academy of Management Journal*, 42, 153–170.
- Chadwick, A., & May, C. (2003). Interaction between States and Citizens in the Age of the Internet: “e-Government” in the United States, Britain, and the European Union. *Governance*, 16(2), 271–300.
- Daft, Richard; Lengel, R. (1986). Organizational Information Requirements, Media Richness and Structural Design. *Management Science*, 32(5), 554–571.
- Danish Business Authority. (2014). *Bredbåndskortlægning 2013*. Retrieved from <http://erhvervsstyrelsen.dk/file/444481/bredbaandskortlaegning-2013.pdf>
- Ebbers, W. E. E., Pieterse, W. J., & Noordman, H. N. N. (2008). Electronic government: Rethinking channel management strategies. *Government Information Quarterly*, 25(2), 181–201.
- European Commission. (2014). *Digital Agenda Scoreboard 2014 – Denmark Page 1 of 7*. Retrieved from <https://ec.europa.eu/digital-agenda/en/scoreboard/denmark>

- Heeks, R., & Bailur, S. (2007). Analyzing e-government research: Perspectives, philosophies, theories, methods, and practice. *Government Information Quarterly*, 24(2), 243–265.
- Hofmann, S., Räckers, M., & Becker, J. (2012). Identifying Factors of E-Government Acceptance – A Literature Review. In *33rd International Conference on Information Systems (ICIS 2012)* (pp. 1–10). Orlando, Florida, USA.
- Kay, A., & Goldberg, A. (1977). Personal Dynamic Media. *Computer*, 10(3), 31–41.
- Kernaghan, K. (2013). Changing channels: Managing channel integration and migration in public organizations. *Canadian Public Administration*, 56(1), 121–141.
- Lamberti, L., Benedetti, M., & Chen, S. (2014). Benefits sought by citizens and channel attitudes for multichannel payment services: Evidence from Italy. *Government Information Quarterly*, 31(4), 596–609.
- Madsen, C., Berger, J., & Phythian, M. (2014). The Development in Leading e-Government Articles 2001-2010: Definitions, Perspectives, Scope, Research Philosophies, Methods and Recommendations: An. In *Electronic Government*. LNCS Springer.
- Madsen, C., & Kræmmergaard, P. (2015). Channel Choice : A Literature Review. In *Electronic Government*. Springer Berlin / Heidelberg.
- Pieterse, W. (2010). Citizens and Service Channels: Channel Choice and Channel Management Implications. *International Journal of Electronic Government Research*, 6(2), 37–53.
- Pieterse, W., & Ebbers, W. (2008). The use of service channels by citizens in the Netherlands: implications for multi-channel management. *International Review of Administrative Sciences*, 74(1), 95–110.
- Pieterse, W., & Teerling, M. (2009). Channel Integration in Governmental Service Delivery: The Effects on Citizen Behavior and Perceptions. *Electronic Government: Proceedings of the 8th [IFIP WG 8.5] International Conference, EGOV 2009*, 5693(2007), 222–233.
- Pieterse, W., Teerling, M., & Ebbers, W. (2008). Channel Perceptions and Usage: Beyond Media Richness Factors . In M. A. Wimmer, H. J. Scholl, & E. Ferro (Eds.), *Electronic Government 7th International Conference, EGOV 2008*. Berlin: Springer.
- Reddick, C. (2005). Citizen-Initiated Contacts with Government: Comparing Phones and Websites. *Journal of E-Government*, 2(1), 27–53. doi:10.1300/J399v02n01
- Reddick, C. (2010). Comparing citizens' use of e-government to alternative service channels. *International Journal of Electronic Government Research*, 6(June), 54–67.
- Reddick, C., & Anthopoulos, L. (2014). Interactions with e-government, new digital media and traditional channel choices: citizen-initiated factors. *Transforming Government: People, Process and Policy*, 8(3), 398–419.

- Reddick, C., & Turner, M. (2012). Channel choice and public service delivery in Canada: Comparing e-government to traditional service delivery. *Government Information Quarterly*, 29(1), 1–11.
- Statistics Denmark. (2014). *Annual ICT Household Survey 2014*.
- Strauss, A. L., & Corbin, J. M. (1990). Open coding. In *Basics of qualitative research: Grounded theory procedures and techniques* (pp. 101–121). SAGE Publications.
- Teerling, M., & Pieterse, W. (2010). Multichannel marketing: An experiment on guiding citizens to the electronic channels. *Government Information Quarterly*, 27(1), 98–107.
- Teerling, M., & Pieterse, W. (2011). How to improve e-government use: An empirical examination of multichannel marketing instruments. *Information Polity*, 16(2), 171–187.
- The Danish Government, D. R. & L. G. D. (2011b). *The Digital Path to Future Welfare eGovernment Strategy 2011-2015*. Retrieved from http://www.digst.dk/~/-/media/Files/Digitaliseringsstrategi/Tilgaengeligt_engelsk_strategi.pdf
- Van Deursen, A., & Pieterse, W. (2006). The Internet as a service channel in the Public Sector. *ICA Conference*.
- Yin, R. K. (2014). *Case study Research design and methods*. Sage Publications.