

Why do they keep calling?
Single parents' Domestication of
mandatory e-government self-service
channels.

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Currently, there is a political demand for applied research and for scholars to produce work, which offers direct economic contributions to society. Unfortunately, this ignores the importance of the basic research, which creates the foundation, which applied research builds upon. I am grateful for being given this opportunity. I could not have written this thesis without the contributions from scholars from media science, Domestication studies, and the channel choice field. It has been a privilege to stand on the shoulders of these giants. This is for you.

Abstract

The Danish Digitization strategy 2011-2015 made e-government channels mandatory within multiple areas, including public benefits. Although most Danes have adopted the e-government channels, many keep using traditional channels. Moreover, some have their own ways of interpreting and using the e-government channels, or getting around the mandatory requirements. This thesis explores citizens' interactions with public authorities following the deployment of mandatory self-service applications. It presents a mixed-method longitudinal case study of single parents, who interact with public authorities and each other, to claim economic benefits. The thesis positions itself within channel choice studies in the e-government research field. It contributes to this literature by studying citizens' actual use of e-government and traditional channels in a post-adoption and mandatory setting. It applies Domestication theory, as a theoretical lens, and follows a social constructionist research tradition.

As an Industrial PhD project, the thesis offers multiple recommendations for practitioners on how to improve the efficiency of public sector administration. The thesis' primary recommendation is that public authorities should not only seek to increase the *share* of citizen-initiated online interactions, but simultaneously strive to reduce the total *volume* of traffic. Public authorities can pre-empt and reduce traffic by improving the quality and quantity of their mass communication channels based on results from user studies and classification of citizen-initiated requests on traditional channels.

The thesis consists of a cover and five papers: Two literature reviews and three research papers. The papers are presented in appendix VI. I advise readers of this thesis to start by reading the papers first.

Paper #1. “*The development in leading e-government articles 2001-2010: definitions, perspectives, scope, research philosophies, methods and recommendations. An update of Heeks and Bailur*”.

In: *Electronic Government: Proceedings of the 13th IFIP WG 8.5 International Conference, EGOV 2014*, vol. 8653. 17–34 (2014)

Abstract: This paper presents a study of the development in leading e-government papers from 2001-2010. Inspired by a study by Heeks and Bailur, the analysis uses a different sampling method, adds new themes, and focuses on changes over time. Through an iterative process known as template analysis the five most cited papers from each year are analyzed according to themes such as perspectives on the impact and impact causes of e-government, methods used, underlying research philosophies and recommendations. Findings indicate that the papers are still somewhat optimistic regarding the impact of e-government, but no longer as technologically deterministic. Discussions of research philosophies start to appear, as do social constructionist studies, although most papers are still positivistic. There is an increase in the use of primary data, and some movement in focus from infrastructure and services towards citizens. There is little development in the discussions of generalization of results and recommendations offered.

Paper #2. “Channel Choice: A Literature review”.

In: *Electronic Government: Proceedings of the 14th IFIP WG 8.5 International Conference, EGOV 2015*, vol. 9248. 3-18 (2015).

Winner of ‘Outstanding paper reward’ in the category ‘The most compelling, critical research reflection’.

Abstract: The channel choice branch of e-government studies citizens’ and businesses’ choice of channels for interacting with government, and how government organizations can integrate channels and migrate users towards the most cost-efficient channels. In spite of the valuable contributions offered no systematic overview exist of channel choice. We present a literature review of channel choice studies in government to citizen context identifying authors, countries, methods, concepts, units of analysis, and theories, and offer suggestions for future studies.

Paper #3. “The Efficiency of freedom: Single parents’ domestication of mandatory e-government channels”. In: *Government Information Quarterly*, available online October 2015

Abstract: The Danish e-government strategy aims to increase the efficiency of public sector administration by making e-government channels mandatory for citizens by 2015. Although Danish citizens have adopted e-government channels to interact with public authorities, many also keep using traditional channels. Previous studies have analyzed citizens’ channel choice in non-mandatory settings, and mostly surrounding a single isolated channel. To cover these gaps we present a mixed method study of citizens’ actual use of e-government channels using Domestication theory as our framework. Our findings indicate that e-government and traditional channels are often used simultaneously, and citizens’ perceptions and previous histories with public authorities influence channel choice. Further, citizens’ existing routines related to third-party non-official channels also influence their interaction with public authorities. Moreover, we find a series of unmet needs, which leads to information requests on traditional channels concerning online transactions. Based on the study we offer recommendations to practitioners to increase the use of e-government channels and reduce traffic on traditional channels.

Paper #4. “Warm Experts in the age of mandatory e-government: Interaction among Danish single parents regarding online application for public benefits”

Accepted for: *The Electronic Journal of e-Government*

Abstract: Citizens’ adoption of e-government channels has been the focus of both academic studies and public policy for over a decade. Current efforts seek to reduce citizens’ interaction with caseworkers through traditional channels in favor of increased use of e-government self-service channels. To speed up this process and reduce the costs of public administration, the Danish e-government strategy has made e-government

channels mandatory. Until now, studies of citizens' channel choice in e-government have taken place at the level of the individual and ignored group processes. To cover this gap, we conduct a qualitative study of how citizen-to-citizen interaction influence public service encounters. We employ Domestication theory and the concept of 'the warm expert' to inform our analysis. Our findings show that citizen-to-citizen interactions extend beyond the point of channel choice and also influence how channels are used and evaluated. We find that citizens not only help each other with ICT-related problems, but also the public service in question and interaction with public authorities in general. Moreover, in addition to helping each other with interactions through e-government channels, citizens also share practices for negotiating with public authorities, including ways of getting around the mandatory requirement. Based on our findings we update existing channel choice process models, and offer recommendations to practitioners.

Paper # 5. "How to succeed with multichannel management. A case study of cross-organizational collaboration surrounding a mandatory self-service application for Danish single parents."

Accepted June 2015 for: *Public Administration in the Digital Age*

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.

1. Introduction

The Industrial PhD scheme and the development of this project

The Industrial PhD scheme is a government funded research grant administered by the Danish Innovation Fund. Private companies can apply for a research grant for a project if it has a scientific basis, an industry focus, and can lead to commercial gain. If the grant is received, the PhD student will be enlisted at a host university and employed by the enterprise. The company receives a supplement for the student's salary, and the student receives money to cover travel expenses. At the end of the thesis, I reflect upon how being an Industrial PhD student has influenced the project.

As an Industrial PhD student, I have been employed by the Danish pensions fund *Arbejdernes Tillægs Pension* (Workers supplementary Pension) (ATP). ATP is a self-owned independent institution, established by law in 1964. All Danish employees, who work more than 9 hours per week, are legally required to set aside money for this pension scheme. In 2010, the Danish Government approved a law to establish the public authority Udbetaling Danmark (UDK), which ATP was required to administer. Following this decision, the digital division (back then aptly called the channel division) of ATP started its search for Industrial Ph.D. candidates. ATP chose the IT University as its academic partner, as one of its directors, Lillian Mogensen, has been on ITU's board of directors.

Throughout this thesis, I will refer to ATP in their capacity as administrators, and UDK as the public authority in charge of a series of public benefits.

My first supervisor, Richard Ling, recommended that I applied for this position. From autumn 2011 to spring 2012, ATP, ITU and I developed the research proposal. Initially the project was meant to study citizens' use of self-service applications for pensions and family benefits. The results would feed into the public procurement of IT services for these areas, thereby contributing to increased use of self-service applications. This was based on the assumption that digital self-service channels are cheaper for administrators than traditional channels. Theoretically, the project would combine adoption models such as the Technology Acceptance Model (Davis, 1989), Diffusion of Innovations (Rogers, 2003) and The Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, Davis, & Davis, 2003) with Domestication theory (Berker, Hartmann, Punie, & Ward, 2005; Lie & Sørensen, 1996; Silverstone & Hirsch, 1992; Sørensen, 2004), and explore the factors known from these adoption models to lead to adoption; *perceived ease of use, perceived usefulness, facilitating conditions and social influence*, from Danish citizens' point-of-view.

Then the project developed. My supervisors and I found out that it was unrealistic to cover both family benefits and pensions in-depth within a three-year period. The target groups for these benefits are quite different, which affects their digital and administrative skills, and their use of ICTs and online services. We

therefore limited the project to family benefits for the pragmatic reason that the schedule for the Industrial PhD project fit the procurement-schedule of it-systems for family benefits best.

The second change concerns the use of adoption models. As I read the e-government literature, I was struck by how adoption studies focused on citizens' intention to use e-government services, rather than actual use thereof. One reason for this was that many studies were undertaken in settings where the adoption rates were quite low. Moreover, I became increasingly frustrated with the setup of many studies. There was little variation in, or thought regarding, the services studied. Often it would be hypothetical services, and even when real services were involved, they would be quite simple; i.e. renewing one's driver's license, or voting. There were no studies of services for complicated processes such as benefit application. Moreover, the scholars seemed to have used convenience sampling to find their respondents. Students undertaking a higher education tended to represent citizens, not pensioners, builders, unemployed, or single parents.

This frustration with the lack of studies of actual use, and the unwillingness to study complicated services, was strengthened when I was first exposed to citizens who use online services. My desk was located next to a call-center, and as I got the opportunity to co-listen to calls made by employers regarding a reimbursement system for companies who took students in. Although this area is different from family benefits, the richness of the telephone conversations compared to the rigidity of e-government adoption and web-stage-models was eye-opening. According to the studies I had been reading up until then, e-government would (almost magically) increase efficiency, effectiveness and citizen satisfaction. The callers or the employees, for that matter, did not share this technologically deterministic and cyber-optimistic sentiment. The situations the callers found themselves in were far from the simple and seemingly made-up examples in many studies. Callers were frequently faced with multiple problems, and sometimes did not even know what the real problems were. They called regarding issues, which were the responsibility of another organization; problems with the digital identification system NemID, or lack of payments due to errors made by the banks or other public authorities. And most importantly; the problems they faced did not relate to their willingness to adopt e-government services, but rather the actual use thereof. They used several channels simultaneously, calling while remaining in front of their computers. These calls would not be reduced just because people adopted e-government services; sometimes the online services in question caused rather than reduced calls. This understanding is missing in a lot of the early e-government literature.

How could studies of the behavioral intention to use a hypothetical and generic e-government service possibly capture the complexity and nuances which actual use entailed? What advice could I offer based on these studies, besides pointing out that self-service applications should be easy to use and useful? And where would I find a framework, which acknowledged the interplay in people's use of communication channels?

The Channels in Balance project

The Dutch Channels in Balance project and the channel choice and multichannel studies it spawned seemed like a perfect fit. These studies have a user perspective, acknowledge that people have several channels to choose from, are informed by theory, and take place in collaboration with government organizations. As a result, they often study actual use, demonstrate sensitivity to the context in which citizens' interaction with public authorities occur, and offer practical and concrete recommendations. I decided to drop the e-government adoption models and position the project in relation to channel choice studies instead. I have since come to appreciate many of these adoption studies, especially their original frameworks, and understand that they provide different perspectives, were written under different circumstances, and answer different questions than the ones I posed.

To me, the most important finding from channel choice studies is that it offers empirical evidence that, communication is not a zero-sum game, backed up by theoretical explanations. Citizens' adoption of one channel does not lead them to stop using other channels. Pieterse (2009) presents data traffic from the Dutch Tax and Customs Office from 2002-2005. Although the share of internet traffic doubled from 30 to 60 percent in this period, traffic increased across all channels, and the total volume more than trebled. The awareness that communication channels tend to supplement rather than substitute each other is missing from both the early e-government literature as well as the Danish e-government strategy, which seeks to increase the *share* of traffic via digital channels, rather than reducing the overall *volume* across channels.

Research question

The *supplement versus substitution dilemma* as it is known in the Uses and Gratifications tradition of media science became an interesting challenge (Althaus & Tewksbury, 2000), we decided to tackle head on. After a thorough discussion with my boss at ATP, we reformulated the research question of the project to capture this aspect. The original research question had focused on how to increase citizens' use of self-service applications. In addition, the project should also examine how to simultaneously reduce traffic via traditional channels. The new research question, which the thesis revolves around is;

How can public authorities increase citizens' use of e-government channels, and simultaneously reduce the use of traditional channels?

Looking back, this was the right decision. In 2013, 98 percent of the single parents who submitted information to UDK about whether they were still single did so using the online application. According to the national e-government strategy, 98 percent is a roaring success. Anyone who's dealt with the 2013 single parents' declaration be it UDK caseworkers, the single parents themselves or administrators will tell you this was not the case. When it comes to self-service applications for family benefits, adoption, or the willingness to use the services, is not a large problem. The actual use of the services, however, is a different story.

Thus, the Ph.D. has changed from being an adoption project to a post-adoption project. Hopefully, this change also highlights the novelty of the project. Unlike previous e-government studies, which focus on how to get people online, I study what happens afterwards, when citizens are sitting in front of their computers, or with a tablet in hand ready to solve tasks related to public benefits.

Domestication Theory

Due to the increased focus of actual use and post-adoption processes, Domestication theory has been vital in this thesis. The use of Domestication theory influenced both the data collection and analysis. Following this tradition, I have sought insight into how Danish citizens interact with public authorities and explored the reasons citizens provide for their actions. By applying Domestication theory, I supplement the channel choice in e-government literature with studies of channel choice from the citizens' point-of-view. Moreover, this framework assumes that people use technology differently than designers intended, and actively encourages researchers to study the variations in use, and how people make technology their own (Lie & Sørensen, 1996; Sørensen, 2004). This assumption is in stark contrast to many previous e-government studies and the mandatory requirement of the Danish e-government strategy. Studying actual use provided new insight on how citizen-to-citizen interaction influences an entire service encounter. It has highlighted citizens' simultaneous use of channels, the importance of third party channels, existing routines, and how citizens' values influence their interaction with public authorities, and their reactions to the mandatory e-government strategy. These areas have not been covered extensively until now.

The shift in academic supervisors

In 2014, Richard Ling accepted a position as professor at Nanyang Technological University, in Singapore. From the spring of 2014, Professor Pernille Kræmmergaard overtook the role as my supervisor. While Rich introduced me to the PhD position and Domestication studies, Pernille has in-depth knowledge of digitization in Danish municipalities and the Information Systems and e-government research fields.

The structure of the thesis

This thesis first presents the background of the research project. This is followed by a presentation of research philosophy in section 3, research problems and strategy in section 4, a presentation of Action Research in section 5, and quality criteria in section 6. Section 7 describes the methods used, section 8 contains reflections on applying mixed methods, while section 9 present the theoretical framework. The papers are presented in section 10. Section 11 contains the conclusion and contributions to research and practice. Finally section 12 contains my reflections on being an Industrial PhD student.

2. Background

2.1 A brief history of digital administration in Denmark

This section provides a brief overview of digital administration in Denmark from 1994, when the ‘Information Society Year 2000’ report was launched, until 2011 and the release of the national, mandatory e-government strategy (The Danish Government, Danish Regions, & Local Government Denmark, 2011). For a more detailed description refer to Jæger (2003), Jæger and Löfgren (2010) and Hjelholt (2012).

Jæger and Löfgren (2010) divide the policy development for Danish e-government into two periods. From 1994-2000 while a center-left government was in power, and 2001-2010 when a conservative-liberal government took power. Although this division is based on who has the political power, Jæger and Löfgren recognize that civil servants play a key role in developing policies. Their analysis is based on expert interviews with leading civil servants and analyses of key policy papers.

1994 – 2000: The Information Society and the Digital Denmark

The digitization of public sector administration in Denmark has taken place for decades, and has been seen as vital to achieving efficiency gains throughout this period (Jæger, 2003). However, 1994, is regarded as a key year in Danish e-government history.

In 1994, a committee led by Member of Parliament Lone Dybkjær published the report ‘*The Information Society year 2000*’ on government ICT-policy. It states that Denmark has several strengths as a nation, and Danish values should be part of the IT policy development. ICT should ensure equal access to information and communication, support the democracy, support citizens’ personal and professional development, increase the quality and transparency of the public sector’s services, support the disadvantaged, and finally strengthen Danish business internationally to support the welfare state (Jæger, 2003).

This development would be created by the public and private sector in unison, not by market forces alone (Jæger & Löfgren, 2010, p. 10). Several important digital components and digital policies, which later became part of the mandatory e-government strategy, were originally envisioned here:

- A public electronic cohesive service net for citizens and enterprises (borger.dk)
- An electronic identification card (which later became Digital Signature and finally NemID)
- A digital mailbox for public organizations
- The development of public online self-service applications

According to the OECD the inclusion of all Danes in the development of the Information society was an ‘overarching feature’ of Danish ICT policy and strategy (Jæger & Löfgren, 2010, p. 11). In 1999, a new

report *'The Digital Denmark'* was published. This report has a stronger emphasis on efficiency gains from the digitization of the public sector, and less emphasis on democracy and public participation (Jæger, 2003).

Following the principles of responsibility and measurement from New Public Management, the government was required to submit an annual report to parliament *'The IT and Telecommunications Report'*, which would inform of the progress made. Moreover, the Ministry for Science commissioned a yearly statistical report *'The Information Society'* from Statistics Denmark on ICT use by citizens, businesses, and the public sector to supplement the update. This report was primarily based on a statistical framework by Eurostat to allow for a comparison of citizens and enterprises' use of ICTs across Europe countries. Ironically, surveys of the public sector were only conducted in Scandinavia, so a European comparison was not possible here.

2001 – 2010: A change in government and e-government policies

In 2001, a conservative liberal government replaced the center-left government. The new government made several changes to Denmark's ICT policy, including creating The National IT- and Telecom Agency (NITA) to have an agency responsible for both IT infrastructure and policy development. NITA was required to produce annual reports on the IT and Telepolitical area, so policymakers could keep track of the developments. Increasing the efficiency within public sector administration by digitization remained as a key area, but the elements concerning participatory democracy and the importance of the special Danish aspects were omitted from the ICT policies (Jæger, 2003, p. 73). Moreover, the private sector and market forces were given roles that were more prominent in the development of ICT infrastructure and policies.

In 2009, NITA launched a new statistical report *'The Digital Society'* to replace *'The Information Society'*. Although this report also contained survey data from Statistics Denmark and supplemented the annual IT- and Telepolitical reports, it was structured according to NITA's five key strategic goals rather than the OECD economic model, which Statistics Denmark based their survey frameworks on. As it turns out, I was the civil servant responsible for developing this report.

Thus, the development of the Danish digitization strategy from 1994 – 2010 follows the same overall patterns which Chadwick and May find in their analysis of key ICT policy papers from US, EU and the UK (Chadwick & May, 2003). The digitization of the public administration is first envisioned to bring both economic benefits and increased democratic participation. Over time, policymakers downscale the promises of increased citizen participation and digital democracy and focus on the managerial aspects, especially those pertaining to increasing the efficiency in public sector administration.

2011 – 2015: The introduction of the mandatory e-government strategy

The National Danish e-government strategy 2011-2015 aims to reduce the administrative costs of the public sector by making the use of digital channels and self-service applications mandatory. The strategy uses the

high adoption rates of online services from both the public and private sector for making the case that citizens want to use digital channels:

“The experiences of the Danish Tax and Customs Administration, online banks and libraries speak for themselves: citizens will serve themselves online if it is simple, user-friendly and makes their lives easier. And the more organizations that shift to digital channels, the more resources can be moved from administration to welfare at the municipality, region or central government authority in question. By 2015, we expect to be able to send 80% of all correspondence to citizens in digital form. We also expect that 80% of all applications and correspondence from citizens will be in digital form. This will save billions of kroner on administration throughout the public sector.”(The Danish Government et al., 2011, p. 14)

The transition to mandatory self-service takes place in a series of waves from 2011-2015. Each new wave introduces new areas covered by the mandatory requirements. The third wave, which launched in December 2014, contains the majority of UDK benefit areas such as pensions, family and housing benefits. Figure 1 presents the preliminary plan for these waves and the areas they cover. Some of the areas were adjusted slightly after the plan’s introduction.

PRELIMINARY PLAN FOR THE TRANSITION TO MANDATORY SELF-SERVICE FOR CITIZENS				
	2012	2013	2014	2015
AREAS IN FOCUS	Danish Tax and Customs Administration (SKAT), services for individual citizens such as management of student loans	Citizen-focused services provided by local authorities and the state	Employment, housing, construction and the environment	Employment, social services and integration
EXAMPLES OF TASKS	Moving Medical cards Self-service tax declaration (for submitting information to the Danish Tax and Customs Administration) Signing up for after-school clubs, daycare and schools Student loans Passports	Driving licenses Marriages Birth registration Name registration Admission to higher education	Town planning and roads Income support Construction Vehicle registration License plates	Benefit pre-validation for senior citizens and people with disabilities Reimbursement and social support services Maternity and paternity benefits Old age pension
	WAVE 1	WAVE 2	WAVE 3	WAVE 4

Fig. 1. The preliminary wave-plan for the Danish e-government strategy (FM 2011, p. 17).

The overall goal of the strategy is that 80 percent of all communication and applications from citizens shall take place via digital channels and self-service applications. The 80 percent is an average across several areas. Some areas have lower target rates, while others have higher depending on the service in question and the citizens they cover. Citizens are expected to use digital channels and self-service applications instead of calling or visiting a caseworker. Those who are incapable of using the digital channels can call, or get help at public libraries and *Borgerservice*, local citizens' service centers run by the municipalities.

2016 – 2020: The upcoming e-government strategy

Currently the Agency for Digitization is working on the next digitization strategy which will cover the period from 2016 – 2020. Although it is still work in progress, some keywords are mentioned at the Agency's website (Digitization, 2015). The headline reads 'Service, growth and efficiency at the center'.

It appears, that the new Digitization strategy will remain firmly within the managerial mode, and aim for further efficiency gains in the administration of the public sector. In addition, the strategy also aims to 'offer modern service and promote growth' in the enterprises. However, the website also contains a presentation by the deputy director of the Agency for Digitization, on how the rapid technological development and citizen demands creates new demands for better digital services.

Hopefully, this thesis can contribute to the coming Digitization strategy by demonstrating, that increased usability and improved communication are powerful tools to achieve efficiency gains. The insight generated here rests on multiple studies of actual use. I also hope it inspires the Agency to return to the focus on the citizen, and our uniqueness as a nation from the 1994 report, by combing citizen-oriented studies with the excellent Danish design tradition, for which we are world famous.

2.2 The components of the e-government strategy

The Danish Agency for Digitization, which is part of the Ministry for Finance, is the central authority in charge of the e-government strategy. A series of digital components support the e-government strategy. These are under the authority of the Agency for Digitization, who have outsourced some of the components to private companies. Among the citizen-oriented components are:

Borger.dk (citizen.dk) is a one-stop service portal that grants citizens access to services from local and national government agencies. The Agency for Digitization administer Borger.dk, but other public authorities have sub-sections on the portal where they publish their own content. Benefits from UDK are presented at borger.dk. Each benefit area has its own subsection at borger.dk. Borger.dk has gone through several iterations. In its current form, the front page contains images with links to current events, followed by links to self-service areas and then a division of areas by subject matter such as family and children, school and education, health etc. Since January 2014, borger.dk has applied responsive design to make it accessible

from mobile platforms. Figure 2 presents a screenshot of borger.dk. Note the link to digital post at the top left, and the link to the single parents' declaration in the right hand side.

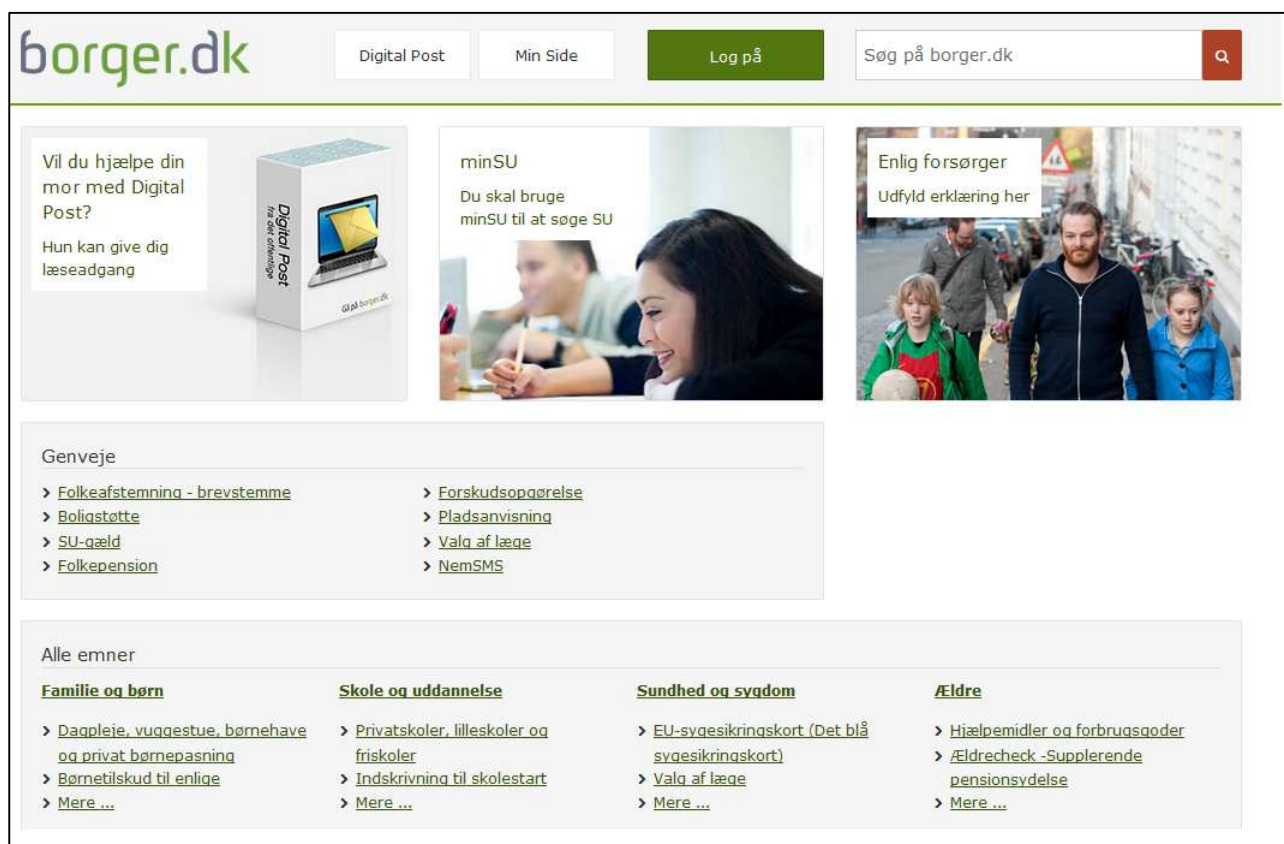


Fig. 2. Screenshot from the front page of borger.dk November 13th 2015

Digital post is ‘a Certified Mail System that enables public organizations to communicate digitally with citizens’ Berger (2015, p. 12). Digital post has replaced traditional letters from public authorities and private companies. In November 2014, digital post became mandatory for citizens, and Danish authorities stopped sending traditional letters to any extent possible. Citizens can be exempted from digital post by showing up at a local service centre with a signed declaration stating that they qualify for one of the permitted reasons. Digital post is accessible through Borger.dk and the privately run e-Boks, and requires the user to login with NemID. E-Boks has also developed an application for digital post, which does not require NemID to log in. By registering an e-mail account or mobile phone number, one can receive a notification when new digital post arrives. Berger (2015b) contains a detailed description of Digital Post.

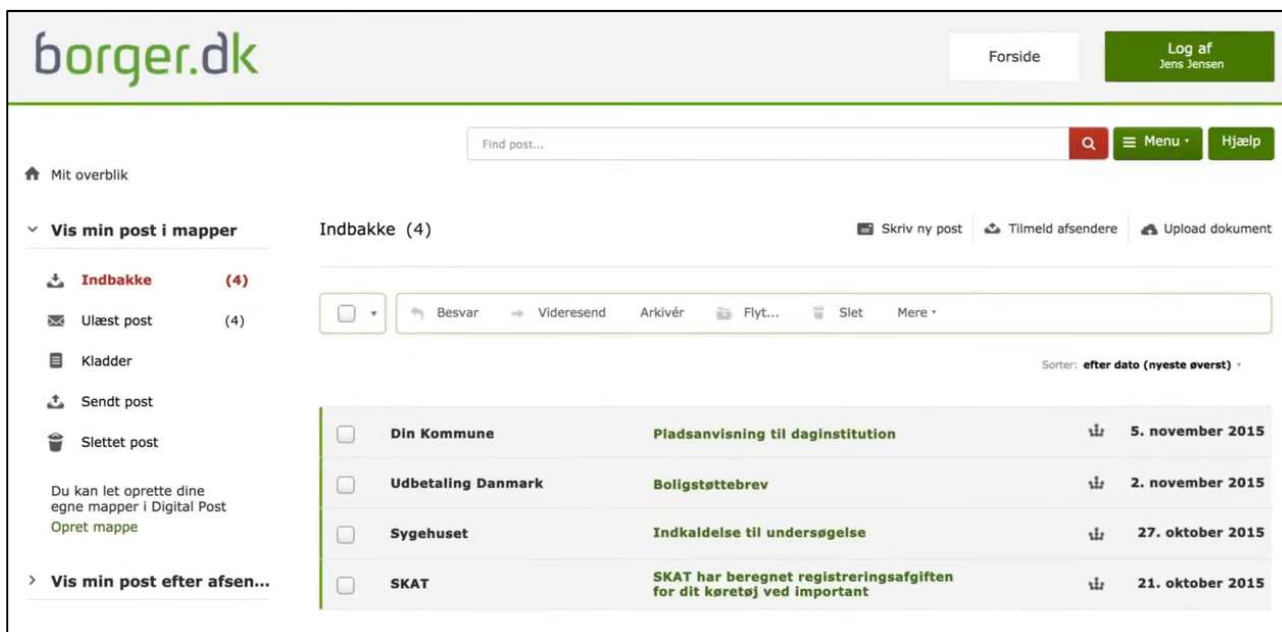


Fig. 3. Screenshot of the digital post inbox as accessed from borger.dk

NemID (EasyID) is a national identification system, which citizens use to identify themselves for online interaction with public authorities and private companies, especially banks. In July 2010 the system launched in a new form consisting of a two-factor security system: a password known to the citizen, and a dynamic code. These codes are accessible through a foldable keycard the same size as a credit card, a keyring, which creates codes through algorithms, and a hardware based solution. Figure 4 shows the keycard. In July 2014, NemID switched from Java to Javascript, and became useable from mobile platforms. By 2014, 91 percent of the Danish population (16-89 year old) had NemID (Statistics Denmark, 2014). For an in-depth discussion of the development of NemID until 2010 see (Hoff & Hoff, 2010).

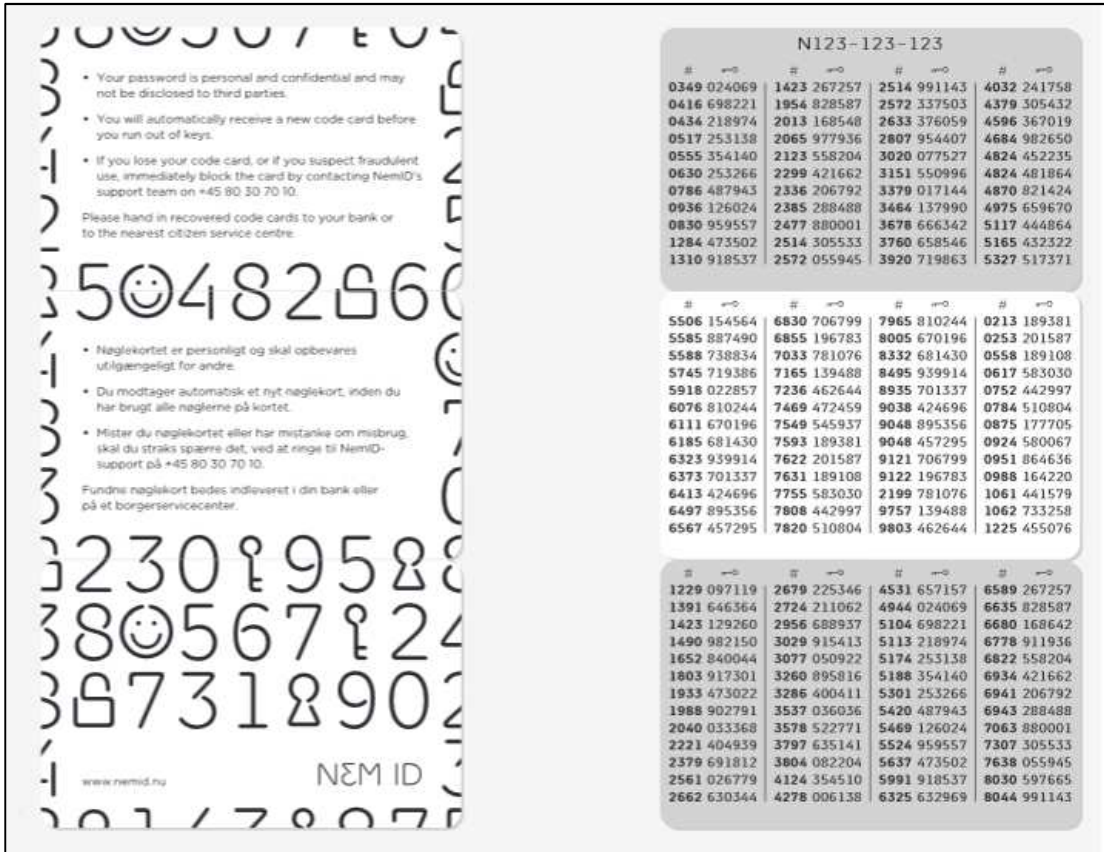


Fig. 4. Official press image from NemID.nu of the NemID key card.

NemKonto (Easy account) is a regular bank account, which the owner assigns for payments from the public sector. All citizens, companies, and associations in Denmark are required to have a NemKonto.

NemSMS (Easy SMS) is a notification system, whereby citizens can be reminded of public appointments and receive notifications from public authorities. The citizen signs up with a mobile phone number, and receives a text message informing of events.

Online self-service applications. The online self-service applications are a vital part of the digitization strategy. Whereas many other components are outsourced to private companies, the self-service applications are run by various public authorities, but presented and typically accessed via borger.dk. In 2015 there were more than 2.000 national and municipal self-service applications presented at borger.dk.

2.3 The public authority Udbetaling Danmark

In 2010, the Danish Government and Local Government Denmark agreed to create the new authority Udbetaling Danmark (UDK) (Payments Denmark) (Udbetaling Danmark, 2012), to be administered by ATP. UDK is in charge of administrating public benefits within major benefit areas; Pension and early retirement

pension, paternity and maternity benefits, housing benefits, and family benefits. In 2015 UDK received responsibility of five additional minor areas. UDK's benefit areas were chosen because they were suitable to make savings by economies-of-scale. The associated casework is called 'objective casework', as there are fixed tariffs and payment dates for these benefits. Benefit eligibility, however, does involve some estimates, especially in relations to the decision of when a person is a single parent. UDK is also responsible for fraud prevention through linkage and exchange of data across registers and authorities.

When UDK launched in 2012 it administered 180 billion DKK (24 billion Euros) in payments to 2 million citizens. In 2015, UDK is expected to payout 209 billion DKK (28 billion Euros) to 2.3 million citizens. According to the 2014 annual report, UDK receives 165.000 calls, 87.000 written requests, and 212.000 notifications of changes in citizens' situation per month (Udbetaling Danmark, 2014).

The 98 Danish municipalities employed 2.000 caseworkers to administer the five benefit areas. With UDK's establishment in 2012, 1.500 caseworkers transferred from the local municipalities to five major national centers located outside the major Danish cities (Udbetaling Danmark, 2012). One third of the caseworkers were temporarily employed. At the end of 2014, UDK employed 1000 caseworkers. 500 caseworkers remain in the municipalities to help citizens with difficult cases, and provide help to those who are unable to use digital self-service applications. The municipalities are also in charge of offering guidance across benefit areas (Folketinget, 2012).

UDK's purpose is to achieve economic savings in the administration of public benefits. These savings cover multiple areas with estimates for the savings varying considerably:

- **Economies-of-scale in the primary administration.** The reduction in caseworkers from 1.500 to 1.000 has led to annual savings of 300 million DKK (40 million Euros) from 2015 and onwards.
- **Fraud-prevention.** Preventing fraud and errors in payments have large economic potential, although it is difficult to determine the exact amount (Sareen, 2014). Reports estimate that fraud and erroneous payments in general constitute 2 – 5 % of the total sum of social benefits. In 2011 this amounted to 5 – 12 billion DKK (0.67 – 1.6 billion Euros) (KMD, 2011; Madsen, Jacobsen, & Jensen, 2011). The Digitization Agency commissioned a report by the private consultant company Deloitte on the possible savings on fraud prevention in 2013. Deloitte estimated a potential of 1.5 billion DKK (200 million Euros) in savings if UDK and all municipalities followed the practices of the best performing municipalities in relation to fraud prevention (Deloitte Consulting, 2014).

2.4 ATP's digitization strategy

ATP's digitization strategy, which also covers UDK, prioritizes citizen-oriented service 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 citizens are expected to use the web-portal borger.dk 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 visits are possible, but rare due to the physical location of the UDK centers. Moreover, the digitization strategy states that ATP puts the user at the center by:

- Understanding processes from the users' perspective
- Involving users in the development of new services
- Communicating from the perspective of the user
- Testing the usability of new services

This Industrial PhD project is part of ATP's plans for putting the user at the center, and understanding the problems related to digital self-service applications from the citizens point-of-view.

2.5 Family benefits

Family benefits is an umbrella term for a series of benefits for citizens living or working in Denmark. Of the 11 different benefits listed at UDK's family benefit section at borger.dk ten benefits are for citizens with children, while the eleventh concerns alimony. The following contains a brief overview of the most common benefits for single parents. The overview and the description of eligibility requirements are not exhaustive.

Child – youth benefit

The most common benefit is the child – youth benefit. Most citizens with children under 18 are eligible for this benefit. Citizens living in Denmark automatically get signed up for it when they have a child, if they live abroad but work in Denmark they have to apply for it. The mother receives the benefit unless the father has custody of the child, and does not live with the mother. The benefit is paid out quarterly until the child is 15 years old, then it is paid out monthly. This is to ensure that the child is either in school or working.

Benefits for single parents (single providers)

Single parents with children under the age of 18 may be eligible for additional benefits as long as the parents are not living with other adults under marriage like conditions. Roughly speaking, this entails that one cannot have a shared economy with another adult. The exact rules for when somebody is a single provider, however, are rather complicated. In 2013 The Ministry for Integration and Social Affairs published a six page (2.800 words) folder explaining the rules and containing examples. The folder contains a disclaimer, which stresses that it is incomplete and is for guidance only. Ultimately UDK decides if a person is a single provider or not.

The most common benefits for single parents are the ordinary supplement (per child) and the extraordinary supplement (per household). Both benefits are paid out quarterly.

Additional benefits

Single parents may also be eligible for several additional benefits, some recurring while others are paid out once for special events such as baptism, and confirmation. I do not have a complete overview of all additional benefits. During the focus group discussions, participants mentioned several benefits including:

- **Confirmation support.** Confirmation is a Christian rite of initiation conducted when the child is 13 – 15 years old. Confirmations are conducted in the spring. UDK administers confirmation support under the family benefits umbrella.
- **Child support.** The ex-partner, typically the father, pays child support to the parent who has custody of the child. If the parents arrange this between themselves the authorities do not get involved. Otherwise they can negotiate through the State Administration. If the child support is not paid, UDK can step in and pay the amount in advance. Afterwards UDK will charge the non-paying partner.
- **Housing benefits.** Citizens who rent their home may be eligible for housing benefits, depending on factors such as their income and what kind of household they live in. UDK administer Housing benefits.
- **Additional educational support.** Parents who are in education can receive additional support. For students this is part of the SU system – The Danish student Grants and Loans Scheme, which is administered by the Danish Agency for Higher Education.
- **Deduction in daycare costs.** Parents in households with low income can apply for a deduction in daycare costs. The local municipalities administer this scheme.
- **Social security benefits.** Citizens who are unable to support themselves may be eligible for social security benefits. The local municipalities are in charge of administering social security benefits.

This ends the description of the project's background and setting. The following section contains a brief discussion of research philosophies, and the events that have influenced my research philosophy.

3. Philosophy of science

This section contains a brief presentation of research philosophy and the three main paradigms within e-government studies: positivism, interpretivism and critical theory. Then I briefly present my academic and professional background and my ontological and epistemological assumptions, which have informed the methodological and theoretical choices made in the thesis. The presentation of research philosophies follow Blaikie and Bryman (Blaikie, 2010, 2012; Bryman, 1995). Although there are several other research philosophies, three are mentioned as key paradigms both within media science and e-government studies (Gunter, 2000; Heeks & Bailur, 2007).

3.1 Ontology and epistemology

According to Blaikie, research paradigms have different *'assumptions made about the nature of social reality that is investigated 'ontological assumptions' and a related set of assumptions about the way in which knowledge of this reality can be obtained 'epistemological assumptions'* (Blaikie, 2010). They differ in how they view the social world, and how this social world can and should be studied. Ontologies answer the question: *'What is the nature of social reality?'* (Blaikie, 2010). He divides them into two categories. The idealist *'which assumes that what we regard as the external world is just appearances and has no independent existence apart from our thoughts'* (Blaikie, 2010), and realist, in which *'both natural and social phenomena are assumed to have an existence that is independent of the activities of the human observer'* (Blaikie, 2010).

Epistemologies answer the question *'How can social reality be known?'* (Blaikie, 2010), and are theories of how we gain knowledge about the world, and studies of the social world should be conducted. Blaikie divides epistemologies into three groups based on the relationship between the researcher and the studied object (Blaikie, 2010). Objectivism regards *'things as having an intrinsic meaning (...) a tree is a tree regardless of who observes it or if it is observed at all'* (Blaikie, 2010). According to subjectivism, the observer imposes meaning on the studied object, and different people may perceive this object differently. Finally, according to constructionism, meaning is constructed rather than discovered and the process of observation is part of this construction of meaning, and influenced by the observer's previous understanding of the world (Blaikie, 2010).

3.2 Research paradigms

Positivism

Bryman and Blaikie note, that there are several versions of positivism with their own distinctions (Blaikie, 2012; Bryman, 1995). However, there are two traits that positivism entails. First, the methods known from the natural science can and should be applied by the social sciences. Second, the studied phenomena should be directly observable by the researcher, either through the senses or by the use of instruments. Thus,

phenomena such as feelings or subjective experience, which cannot be measured directly must be omitted, unless one can observe their direct influence on behavior (Bryman, 1995, p. 14). Thus, positivism is associated with a realist ontology and an empiricist epistemology; there is an objective reality, one whole world, which exists independent of the researcher. The underlying research philosophies are also revealed in how researchers describe their methods; as data exists in the world, it can be *collected* by the researcher, for instance through surveys, where *respondents* provided answers to given questions.

Positivists seek to accumulate knowledge about events by forming the results of studies into general laws which describe the ‘regularities among such events’ (Blaikie, 2010). To do so, scholars must remain objective, and purge themselves of values which can influence their studies (Bryman, 1995, p. 15). They should also refrain from making normative statements, as these cannot be backed up by direct experience. Positivism is often associated with quantitative methods, typically in the form of surveys, where hypotheses are drawn from theories and tested in a deductive process. There are however, also positivistic qualitative studies. In the channel choice literature review, we found a positivistic case study (Barth & Veit, 2011).

Interpretivism

Interpretivism, is based on the assumption that people are different from the objects of the natural sciences by being able to understand and reflect upon their world. Interpretivists believe that people constantly negotiate their interpretations through processes of social interaction (Blaikie, 2010). Interpretivists have an idealist ontology and constructionist epistemology; it is not possible to observe the world directly, but it is possible to gather data on how people experience their world. Thus, while positivists seek to explain the world, by observing people’s external behavior, interpretivists seek to understand the world, by gathering insight into how people perceive the world internally from their point-of-view (Blaikie, 2010). To do so requires qualitative in-depth studies such as interviews, focus group discussions and observations. The goal of interpretivist studies is to uncover how social reality is perceived and given meaning through social processes of interaction and negotiation. Due to the constructionist epistemology, interpretivists claim that researchers and *participants* collaborate to *generate* data through empirical studies. Finally, while positivist will strive to remain objective in order not to taint the data, social constructionist claim that this is impossible, and that the researcher’s underlying values, goals and experience influences their studies.

Finally, although interpretivists claim that the results from any study is unique to the specific situation and research context, it is possible to generalize from such studies by working at a higher level of abstraction. Thus, it is possible to generalize from qualitative studies to theory and models of ‘*typical meanings used by typical social actors engaged in typical courses of actions in typical situations*’ (Blaikie, 2010), while quantitative scholars seek to make generalizations from a sample to a population.

Critical Theory

Unlike positivism and interpretivism, Critical Theory is not just concerned with describing and explaining the world, it is also concerned with changing it (Blaikie, 2010; Gunter, 2000). Critical Theory emphasizes the importance of reason, with which it is possible to reflect upon and criticize society. It was established by the Frankfurt School in Germany in the 1930's inspired by Marx and the notions of class struggle, and continued by a second generation of scholars especially Habermas and Fay in the 1960's and 1970's. According to Critical Theory, there is a difference in the topics that natural sciences and social sciences deal with, and therefore these topics should be studied differently, and create different forms of knowledge (Blaikie, 2010). However, the main emphasis is on human emancipation.

Critical theorists criticize positivists for reinforcing existing power structures and social constructionists for being too subjective and relativist (Gunter, 2000, p. 7). The purpose of critical studies is to '*reveal, explain and understand power structures and relationships within society*' (Gunter, 2000, p. 7). By making people aware of how they are being manipulated, and formulating a plan for change, it is possible to emancipate them and change society (Blaikie, 2010).

3.3 My background and ontological and epistemological position

My research philosophies are influenced by my academic and professional background. Prior to becoming a Ph.D. student, I have a degree in Media Science from the Faculties of the Humanities at the University of Copenhagen, where I also worked as a research assistant in a research and development project. My assumptions are formed from this background, and with an emphasis on the Scandinavian tradition for reception analysis, as developed and taught by Professor Klaus Bruhn Jensen.

Reception analysis, like its cousin Domestication Theory, is inspired by audience studies undertaken by scholars from the Birmingham School, especially Stuart Hall and his notion of encoding/decoding (Hall, 1973) and the Uses and Gratifications tradition of media science. Modern reception analysis contains two main aspects. The first contains the role of the reader. According to Gunter: '*It [reception analysis] strongly emphasizes the role of the 'reader' in the 'decoding' of media texts. It has claimed for the audience a power to resist and subvert the dominant or hegemonic meanings offered by mass media.*' (Gunter, 2000, p. 19). Reception analysts claim, that people read texts differently depending on their social and cultural background. The meaning created by the reader can deviate from that, which the producers of the message intended, like Domestication scholars also claim.

The second aspect concerns a focus on media use, inspired by the Uses and Gratifications tradition, where the emphasis shifts from media effect theories, '*what do media do to people*', to rather studying practices of media use '*what do people do with the media?*' (Katz, 1959). To paraphrase Katz, one could argue that this thesis is not as concerned with what the mandatory e-government strategy does to citizens, as with what citizens do to the strategy. With the emphasis on studying meaning making and people's practices for media

use, there is a strong empirical tradition within reception analysis using qualitative methods. Not surprisingly, I will therefore primarily identify as a social constructionist. However, ‘a mixed method pragmatist’ might be more accurate.

Still, I appreciate the contributions made by scholars who employ quantitative methods. I understand the necessity measuring the extent of a phenomenon, and I believe that scholars should strive for such overviews where possible. It matters whether two percent or 98 percent of the population use an e-government self-service application, or if 100 calls or 25.000 calls are made a week.

However, producing statistics as a civil servant for five years has given me first hand insight into the politicization of statistical indicators. I have represented Denmark in numerous working- and expert group meetings in the Nordic Countries, the EU and OECD where the statistical frameworks and individual indicators for tracking the ICT development are created. In 2010, I was chairman of United Nations’ International Telecommunication Union’s Expert group on ICT Indicators. Here I observed how individual and composite indicators were discussed according to the interest of the various countries. And I learned of the problems in trying to compare data from developed and developing countries, the latter often not collecting the data and having to resort to proxies instead. There is a book review in the copy room here at ITU. The title reads *‘There are greasy fingerprints everywhere on numbers’*. I could not agree more.

Another factor, which has influenced my research philosophy, is that I have lived in four different countries: Denmark, Norway, Sweden, and in the UK as an exchange student. From this upbringing comes an awareness that people do not perceive everything the same way. Things we take for granted in Denmark, such as our welfare system, is perceived and works differently in the UK. As a social constructionist, I believe that my background has influenced the methods and theory I have selected to solve the research problem, and what I perceive as being the problem. With this in mind, the next section turns to the thesis’ research problem, research questions and research strategy.

4. Research problems, research questions and research strategy

This section discusses the overall research problem, which the thesis revolves around, the research questions posed to study the problem, and the research strategy undertaken to answer those questions.

4.1 Research problem

This thesis describes the findings of a research project, which was set in motion and co-financed by a private partner. From the outset, the project has belonged to the realm of applied research, rather than basic research. This condition has influenced both the overall research problem the thesis addresses, and the research questions, which the thesis seeks to answer.

As mentioned in the introduction, the research problem and research question have evolved from 2011 to 2015. When we created the original project proposal in 2011, UDK had not yet launched and we did not have data on the adoption rates for e-government self-service applications for family benefits, as these were administered locally by 98 different municipalities. Therefore, the original research problem was concerned with how a public authority could increase the adoption rates for self-service applications to at least 80 percent, as is the target of the mandatory e-government strategy.

Then UDK launched and the mandatory e-government strategy was implemented. Thus, to ATP the original research question was outdated. Had I written a traditional Ph.D. as basic research, I could have contributed to the e-government and channel choice literature by studying reactions to the mandatory e-government strategy. Then it would not have been an applied research project, nor would it have benefitted my employers who funded the project. However, even though the adoption rates increased, another problem appeared; an abundance of calls, many of which regarded single parents' interaction with UDK through the e-government self-service applications. The new research problem was concerned with how we could reduce these calls.

4.2 Research questions

Blaikie distinguish between three types of research questions (Blaikie, 2010):

- **What** questions are concerned with describing a social phenomenon.
- **Why** questions are concerned finding causes for the observed regularities.
- **How** questions are concerned with causing change, by asking how things could be different.

Blaikie notes that What and Why questions are mostly found within basic research, whereas applied research also contains How questions. In applied research, and within certain forms of basic research such as critical studies, there is also an emphasis on changing the phenomenon in question, sometimes through an intervention (Blaikie, 2010, 2012). Action research also belongs to this last category, as it is concerned with bringing about change through an intervention. A researcher typically asks these questions in order; first to describe the phenomenon in question, then to find the cause of the relationship between the observed factors. This can be done by providing an explanation, typically through the application of quantitative methods

studying the phenomenon externally, or by seeking an understanding by studying the phenomenon internally, from the perspective of the participants. Whetten (1989) argues that answering Why questions presents the rationale which ‘*constitute the theoretical glue that welds the model together.*’ (Whetten, 1989, p. 491). Thus, theory and model building often takes place from asking and answering Why questions.

Following Blaikie’s classification, the overall research question this thesis addresses is:

- *How can public authorities increase citizens’ use of e-government channels, and simultaneously reduce the use of traditional channels?*

To answer this question, however, two other questions are important, which each has several sub-questions:

- *What are single parent’s practices for interacting with Udbetaling Danmark regarding public benefits?*
 - *Which channels do they use?*
 - *When do they use these channels?*
 - *What tasks do they use the channels for?*
 - *Is there a development in channel traffic?*
 - *Is there a difference in what channels they use and how they use them?*
- *Why do single parents interact with UDK in this manner?*
 - *Why is there a difference in their practices?*

The specific research questions guiding the papers are presented therein.

4.3 Research strategy

Blaikie refers to research strategies, as ‘*logics of inquiry*’, which researchers need to adopt in order to ‘*generate new knowledge about social phenomena*’ (Blaikie, 2010). They represent ideal processes, which are rarely followed precisely by scholars. The research strategies have different aims, underlying ontological and epistemological assumptions, and processes for generating knowledge. Blaikie presents four research strategies. Induction, deduction and retroduction are derived from the natural sciences, while abduction, is unique to the social sciences (Blaikie, 2010).

- **The Inductive research strategy** aims to ‘*establish descriptions of characteristics and patterns*’ (Blaikie, 2010). It generates knowledge by inferring from direct observation and experiments.
- **The deductive research strategy** aims to ‘*test theories, to eliminate false ones, and corroborate the survivor*’ (Blaikie, 2010). It generates knowledge by testing hypotheses deduced from theory.

- **The retroductive research strategy** aims to ‘*discover underlying mechanisms to explain observed regularities*’ (Blaikie, 2010). It generates knowledge by seeking to explain which mechanism, best explains a documented regularity, by testing multiple possible explanations.
- **The abductive research strategy** aims to ‘*describe and understand social life in terms of social actors’ motives and meanings*’ (Blaikie, 2010). It is based on an idealist or subtle realist ontology and a constructionist epistemology. It generates knowledge by studying how people describe and perceive everyday phenomena, and iteratively developing a theory from their statements.

Overall, I have applied an abductive research strategy in this thesis. However, I apply a retroductive research strategy in the pilot stage to learn more about the patterns in channel traffic. Having first observed certain regularities in this traffic, I sought to explain this by thinking about what phenomena could cause it. Then I studied a calendar of UDK system generated events, and found that the increases in traffic corresponded to quarterly payments and the annual single parents’ declaration. Similar patterns were observed for other benefit areas.

Blaikie summarizes the process guiding the abductive research strategy as (Blaikie, 2010, p. 90, in original emphasis and formatting):

‘Everyday concepts and meanings
 provide the basis for
social action/interaction
 about which
social actors can give accounts
 from which
social scientific description can be made
 from which
social theories can be generated
 or which can be understood in terms of
existing social theories or perspectives.’

I have generated and analyzed data from my empirical studies to understand my participants’ interaction with UDK actions from their perspective, and then let their everyday terms and stories inform my analysis. I have sought to understand their interaction with public authorities from the inside. Based on my analysis, I extend existing channel choice theories.

5. Action Research

This thesis studies how public authorities can increase citizens' use of self-service applications, while simultaneously reducing calls. The research goal is to create knowledge of how citizens interact with public authorities, and how they adopt and Domesticate or reject self-service e-government channels. The original goal was to contribute with this knowledge to the procurement of IT-systems for UDK, thereby creating services, which the citizens wanted to use and felt secure using. Since its inception, I have also contributed to improving existing e-government services, and the communication surrounding them, through presentations, discussions etc. with colleagues at ATP responsible for the administration of these services.

I will argue that this project is not an Action Research project as such, but rather applied research. I have only conducted one direct intervention into a process (paper#5). The remaining contributions have occurred continuously throughout the projects three-year time span, and some feed into the procurement for the new IT-systems for UDK's family benefits, which is still under way.

Nevertheless, there are certain similarities, especially in the terms of the having both a research goal and a problem solving goal. McKay and Marshall present a useful conceptualization of these two goals, which they have created partly to present a rigorous framework for Action Research (AR), but also to escape criticism of AR merely being consultancy work (McKay & Marshall, 2001). As an Industrial PhD student, their thoughts have struck a chord with me, and their framework has been useful for my purposes as well.

Next, I briefly present McKay and Marshall's description of AR and its research cycle and problem solving cycle. This framework is useful, as it distinguishes between contributions to research and practice, while recognizing their connection.

5.1 The dual cycles of Action Research

According to McKay and Marshall, AR *'represents a juxtaposition of action and research, or in other words, of practice and theory'* (McKay & Marshall, 2001, p. 47). It emphasizes the collaboration between scholars and practitioners with the dual goal of bringing about change to a specific problem context and create knowledge from this context and problem solving. Collaborations between scholars and public sector practitioners are frequent within the channel field (Kernaghan, 2013; Madsen & Kræmmergaard, 2015). A prominent example is the 'Channels in Balance project', where researchers from Dutch universities collaborated with the Dutch Tax and Customs Agency.

The second aspect of AR is that it rejects the methods of the traditional objectivist science in favor of *'the active and deliberate self-involvement of the researcher in the context of his/her investigation'* (McKay & Marshall, 2001, p. 47). McKay and Marshall argue against the application of methods from the natural sciences as the studies revolve around human actors, who can influence the studies, and take place in a specific context, which it cannot be separated from. Therefore, research methods based on a social

constructionist framework are more fitting to AR studies. If we apply this understanding to the previously mentioned research philosophies in e-government, AR should belong within the interpretivist paradigm, although there are also many critical AR studies, e.g. (Berger, 2015). The emphasis on solving problems and causing change carries an underlying presumption, reminiscent to Hacking’s description of social constructionism; that the phenomena under observation is not inevitable. It could, and probably should, be changed (Hacking, 1999, pp. 6–7).

Having explained the basics tenets of AR, McKay and Marshall then present some of the criticism of AR, such as it being little more than consultancy, that one cannot establish causal relations or generalize from AR studies, and that it lacks the qualities of rigorous research (McKay & Marshall, 2001, pp. 48–49). To dismiss some of this criticism, they present a framework for how AR can be conceptualized through a research cycle, which focuses on answering research questions and offers empirical and theoretical contributions, and a problem solving cycle, which offers recommendations for practitioners on how to solve the problem. Figure 5, presents this dual cycle. It is reprinted with permission from authors and publishers.

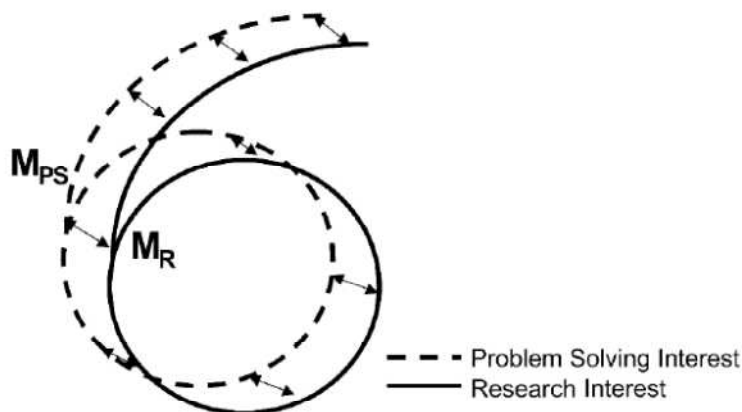


Fig. 5. The dual cycles of problem solving and research in Action Research.

Adding the research cycle helps distinguish AR from consultancy, moreover increased attention to research increases the scientific rigor of the studies. However, this also entails that researchers must contemplate how the AR project can contribute to research, and conduct a literature review etc. to find the gaps in the literature, which the studies are filling. McKay and Marshall sum up by presenting an AR framework, which includes both research cycles. Figure 6 below presents this framework, reprinted with permission. The next section contains an in-depth presentation of the various compositional elements shown with abbreviations in this figure, and presents how the thesis contributions can be conceptualized using this framework.

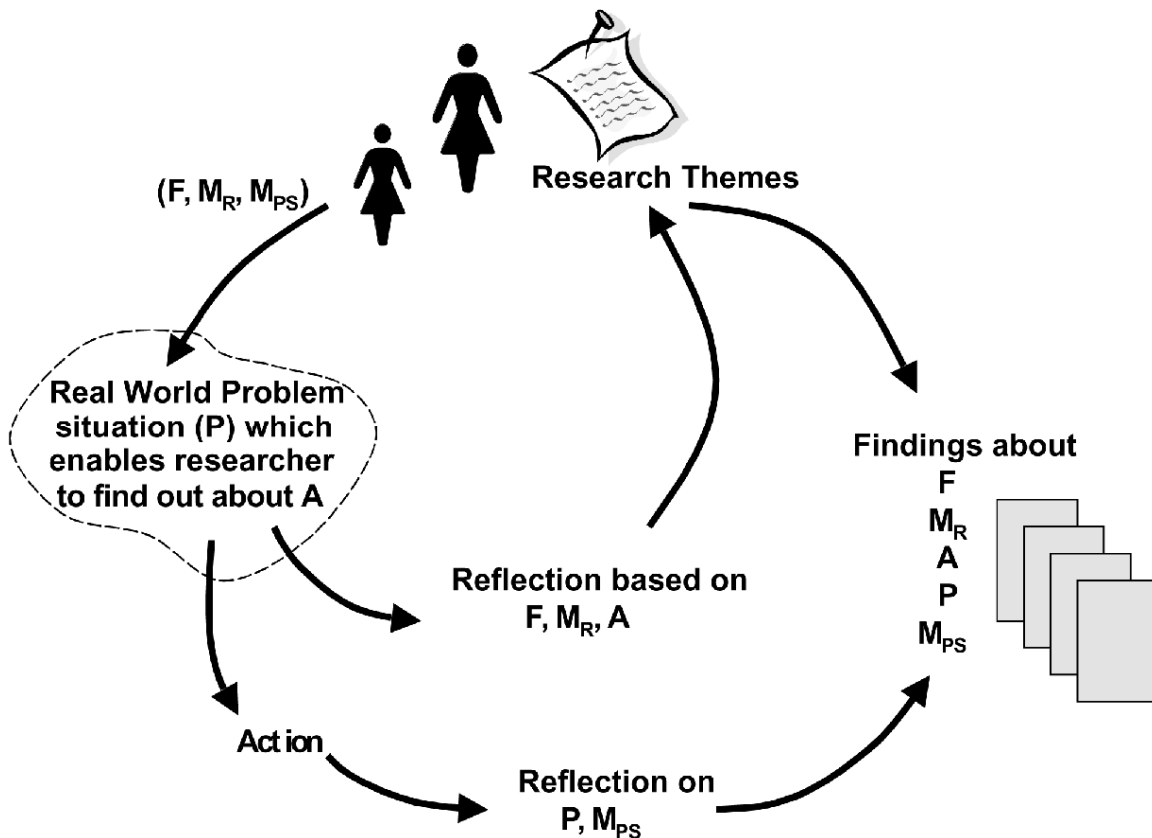


Fig. 6. Outcomes of the dual action research cycle.

5.2 Compositional style in Action Research

Mathiassen, Chiasson & Germonprez conducted a compositional analysis of AR papers (2009;2012) to gain an insight into the different styles Action Researchers apply, in order to offer new Action Researchers a framework and means of structuring their papers to get published in high-ranking scientific journals. Mathiassen taught them to my supervisor Pernille Kræmmergard, and we applied them for the research papers. Table 1 lists the compositional elements, taken directly from Mathiassen et al. (2009, 2012).

Table 1. Compositional elements in Action Research

Element	Definition
A	The area-of-concern under investigation
P	Real-world problem setting
F	Conceptual framing
F _A	Framing based on concepts from Area-of-concern
F _I	Framing based on concepts independent of Area-of-concern
M	Adopted method of investigation
M _{PS}	Problem solving method
M _R	Research method
C	Contribution
C _P	Contributions to solving the problem
C _A	Empirical contributions to the area-of-concern

C_{FA}	Conceptual contributions to area-of-concern (framework)
C_{FI}	Contributions to framework independent of area-of-concern
C_{MPS}	Contributions to the problem-solving methodology
C_{MR}	Contributions to the research methodology

A, the area-of-concern in the thesis, is the digitization of public authorities, and e-government self-service channels, the problem setting, P, is single parents' interaction with Udbetaling Danmark, F_A is the channel choice literature in e-government, while F_I is Media Richness Theory, and Domestication theory. The research method, M_R , includes two literature reviews, analysis of channel traffic, focus group discussions and semi-structured interviews and observations. The problem solving method, M_{PS} , includes added communication, and the improvement and clarification of existing communication. Mathiassen et al. proceed to present five compositional styles in AR, each structured in different manners according to which area they contribute. *From-the-trenches*, which contributes to P or A, *Area-of-concern-investigation*, which offer empirical or conceptual contributions to A or F_A , and finally *Framework investigations*, *Problem-solving-methodology* and *Research methodology investigation*, which contribute (C) to F_I , M_{PS} and M_R respectively, either as critique or development.

5.3 Contributions of the papers following compositional style

The five papers in this thesis belong to the first two categories of compositional styles. The two literature reviews contribute to knowledge about how e-government and CC is studied, and what the research and knowledge gaps are. Paper #3 and #4 contribute with empirical insights about the area-of-concern, and paper #4 offers a conceptual contribution by expanding an existing CC model. Paper #5 focuses on contributing to problem solving by reporting from a field experience, and could be labeled as a *From-the-trenches* paper. However, it also offers empirical and conceptual contributions, knowledge about why citizens are calling, and a conceptual model, which illustrates how improving communication can reduce calls.

6. Quality criteria

This section presents quality criteria in relations to applied research, qualitative studies and focus group discussions. In the conclusion section, I return to these criteria, and discuss whether the thesis meets them.

6.1 Quality criteria within applied research

Blaikie notes that applied research projects have different goals than basic research projects (Blaikie, 2010). Basic research *'deal with theoretical problems'* and *'is concerned with advancing fundamental knowledge about the social world, in particular with the development and testing of theories'* (Blaikie, 2010). Applied research deal with *'social or practical problems'* and *'is concerned with practical outcomes, with trying to solve some practical problem, with helping practitioners accomplish tasks, and with the development and implementation of policy'* (Blaikie, 2010).

Blaikie, however, does not mention quality criteria in relation to applied research, but he does mention its goals. Thus, quality criteria in applied research cover the extent to which a problem has been documented and dealt with, and if policies have been developed and implemented from the research.

As an Industrial PhD student, I have two main tasks; to solve a practical problem, and to produce a thesis, which meets the requirement for a Ph.D. I previously referred to the dual cycles of action research, which describes how an action research project entails both a problem solving and research (McKay & Marshall, 2001). I do not regard this project as an AR project, but an applied research project. As I have not found frameworks for rigor in applied research, I will use McKay and Marshall's (2000), as it seems quite fitting. It covers four main areas, whereby the quality and rigor of research can be evaluated:

- **Conduct of research** – How has the research been conducted?
- **Conceptual significance** – This concern justifying the research topic to academia, the use of theory, contributions to literature and suggestions for future studies.
- **Presentation of research** – How is the research presented in scientific papers, has it been publicized?
- **Practical significance** – This concern whether the problem owner will agree that there has been an improvement as result of the intervention, and whether the research contributes to practitioners.

The first three areas concern the research cycle, while the last covers the problem solving cycle. I will go into further detail with the first three areas below, and return to all of the areas in the conclusion section.

6.2 Quality criteria within social constructivism and Domestication studies

Quality criteria within interpretivism and social constructionism is a topic on which there are many and conflicting views. To a relativist the idea of having certain criteria for establishing validity is problematic, as validity as a notion, will be perceived differently by people depending on their background and current situation. The notion of 'truth' does not make sense from an ontological point-of-view, since there is not one reality, but multiple perceptions if reality. However, from a more pragmatic or conventionalist point-of-view,

there are one set of quality criteria for quantitative studies and another set for qualitative studies. Although I have conducted a mixed method project, my primary methods for generating data are qualitative. Following Bryman (2006), I will therefore refer to the criteria for qualitative studies. There are numerous sources for such criteria, but Creswell (2014) presents a detailed checklist covering both validity and reliability. Creswell is consistently referenced by Blaike, Bryman and Brannon, whose works I also apply.

According to Creswell, validity is concerned with *'determining whether the findings are accurate from the standpoint of the researcher, the participant, or the readers of an account.'* (Creswell, 2014, p. 201). He presents a list of eight validity strategies, which can be used *to assess the accuracy of findings as well as convince readers of that accuracy'* (Creswell, 2014, p. 201). He lists these strategies according to how frequently they are applied, and how difficult they are to conduct (Creswell, 2014, pp. 201–203).

Validity strategies

- **Triangulation.** Like Hammersley (1996) and Brannen (2005b), Creswell argues that using multiple methods to generate information or studying a topic from different perspectives, adds to the validity of a study if the results are coherent.
- **Member checking.** This means returning to the participants and discussion one's findings and interpretations with them. Follow-up interviews is one such method.
- **Rich, thick description.** By providing a detailed description, readers get additional insight into the context in which the studies occurred. This makes the results more realistic.
- **Clarify researcher's bias.** Self-reflection creates an honest narrative, and informs the reader of how one's values and experiences have influenced the interpretation of the generated data.
- **Present negative and discrepant information.** Participants may have different perspectives on a certain theme, and all the data may not support a finding. Presenting contrary data adds to the realism.
- **Spend prolonged time in the field.** Spending more time with participants adds to the researchers' experience and understanding, and allows them to generate more detailed information.
- **Peer debriefing.** By having another person review and ask questions about the study, to ensure that it resonates with others.
- **Review by external auditor.** This entails having a third party, independent and unfamiliar to the researcher, assess the entire study.

Reliability in qualitative studies

Creswell presents four points to ensure that qualitative results are reliable (Creswell, 2014, p. 203). Two of these concern qualitative studies in general, and two concern studies conducted by multiple researchers.

- **Check transcripts for errors**

- **Ensure that codes are applied consistently** throughout, by constantly comparing data and codes, and by writing memos.
- **Communicate regularly** and share results in team research.
- **Cross-check codes.** This process is also referred to as measuring intercoder-reliability. It is done by comparing the codes assigned to the same text by two researchers. According to Cresswell, intercoder-reliability should be at least 80 percent.

Creswell briefly presents a discussion of generalizability from qualitative studies. He argues that scholars are careful in attempting to generalize too much from qualitative studies, and also that the quality of qualitative research also comes from the in-depth presentation of a particular case. Below I go into more detail with generalizability by presenting Krueger's and Halkier's views on the topic.

Quality and validity within Domestication studies

Within Domestication studies, Haddon (2011) argues that scholars can compensate for the internal validity problems from qualitative studies, by complementing the statements on ICT practices, by using multiple methods to study other additional aspects of their lives to get further insight into their lives. The following quote can also be regarded as an argument for triangulation in Domestication studies.

“Essentially, the domestication approach provides contextual information about households and individuals to better appreciate why they use ICTs in the way they do. Part of that research process involves allowing those researched to explain their actions in their own words, although this is only ever part of the picture. After all, people are to varying degrees articulate, they in part react to the interview situation (and sometimes return to change their story a little on reflection), they are presenting themselves to the researcher, and they are sometimes concerned to provide justifications for their decisions. But if we complement this verbal feedback with other information that can include an understanding of their wider values and aspirations, their general circumstances (e.g., their organization of time, the spaces in which they live, their financial situation) and their relationships with others (e.g., parents making rules about how their children can use technologies, social network commitments), then we can formulate a broader understanding of people's different forms of engagement with ICT.(...) This means that an in-depth approach is often favored, which can include interviews, observations, and a range of other methodologies to illicit this information.”
(Haddon, 2011, p. 313)

6.3 Quality criteria for focus group discussions

Krueger (1994) and Halkier (2007) discuss quality criteria, including the validity and generalizability of data generated through focus group discussions. They both argue that focus groups produce valid results, if they are used for the right areas, and conducted following certain guidelines. Thus the scholar needs to provide a valid argument for *why* a study has been conducted using this method, and present detailed information of

how they were conducted. *'Focus groups are valid if they are used carefully for a problem that is suitable for focus group inquiry.'* (Krueger, 1994, p. 31).

Halkier argues that the participants need to be representative of the context one wants to inquire into, the necessity of a good introductory question to present the theme, and finally transcribing the data prior to an analysis. In the method section, I argue why I find focus group discussions to be a fitting methodological approach in my study. I also present a detailed account of how the participants were selected, how the focus group discussions were conducted, and how the data was analyzed. In Appendix II and III, I present anonymized information about the participants and the manuscript for the focus group.

Is it possible to generalize from focus group discussions? Halkier argues, that it is not possible to make statistical generalizations, as focus group discussion is a qualitative method involving few participants. However, she claims that it is possible to make generalizations to theory, and infer to analytical categories and ideal types from patterns in the data (Halkier, 2007, pp. 113–114). Krueger, is less cautious and more pragmatic, and argues that some generalization is possible. He presents his view in a fictional conversation between a hesitant decision maker and a professor (Krueger, 1994, p. 34, original emphasis):

Decision Maker: *Well, can I generalize or not with focus group results?*

Professor: *My suggestion is to make cautious generalizations. If you're making really big decisions where the consequences of error are major, then by all means use multiple set of methods. If the different methodological procedures lead you to the same conclusion, then you can move with greater confidence.*

To sum up, both Halkier and Krueger argue that some generalization is possible, although not statistical generalization. Moreover, Krueger, in line with Haddon and other advocates of mixed methods, argue that scholars should use multiple methods to validate the findings from focus group discussions if necessary.

This section has outlined the basic principles for quality criteria within applied research and social constructionist studies, and in focus group discussions. The next section contains a detailed presentation of the empirical studies.

7. Detailed descriptions of methods

This section presents an in-depth discussion of how the empirical studies were conducted. It also contains a presentation of dropped studies, and an explanation of why I decided to drop them. The method applied for the two literature reviews (Papers #1 and #2) are explained in detail there, and will not be covered here. Table 2 presents a timeline for the empirical studies.

Table 2. Timeline for the empirical studies

Empirical study	Method	Time frame
1. Statistical overview	<ul style="list-style-type: none"> • Statistics Denmark's ICT Household Survey + extension • Eurostat ICT Household surveys 	January 2013 (Data covers 2005 - 2015)
2. Statistics on channel traffic and self-service rates	<ul style="list-style-type: none"> • Data on incoming calls from citizens to UDK's family and housing benefit sections • Data on unique visits to family and housing benefit sections on borger.dk • Data on self-service rates on UDK's family benefit applications • Data on completion rates on UDK's self-service applications from borger.dk 	April 2013 – August 2015 (Data covers 2012 – 2015)
3. Data collection in UDK call center	<ul style="list-style-type: none"> • Co-listening to calls • Informal talk with caseworkers 	April 2013
4. Focus group discussions	<ul style="list-style-type: none"> • Five focus group discussions with 28 single parents 	April – May 2013
5. Follow-up interviews and observations	<ul style="list-style-type: none"> • Semi-structured interviews with 9 single parents from focus groups • Observations of single parents using e-government channels 	December 2013 – June 2014
6. Working at ATP	<ul style="list-style-type: none"> • Participation in weekly division and team meetings • Presentations • Meetings on improving the annual single parent's declaration 	August 2012 – September 2015 January 2014 – January 2015

7.1 Statistical overview of the Danes' ICT and e-government use

The thesis revolves around the adoption and use of e-government self-service applications, and the initial research was how to increase single parents' adoption rates to 80 percent. To get an overview of the development in the Danes use of ICTs and e-government services I studied, results from Statistics Denmark's annual ICT Household survey, which is based on a framework by Eurostat, the EU's statistical office (Statistics Denmark, 2014). Further, I studied Eurostat's data for international comparisons.

EU's ICT household survey consists of multiple modules, which cover areas such as access and use of ICTs, skills, e-commerce, security etc. Some questions and modules are repeated annually or bi-annually, where others are one-offs. In 2013, the survey contained an extended module on e-government, including questions concerning citizens' use of non-e-government channels, such as telephone calls and counter visits. However, in the EU framework, this question is only asked to respondents that have used the internet within the last 12 months, as it is part of the e-government module. I wanted to know whether there is a difference in the use of additional channels between internet and non-internet users, and e-government and non-e-government users. Therefore, I spent part of my research budget to have Statistics Denmark expand the sample for this question to all respondents.

The results indicate that internet users are slightly more likely to use additional channels. However, they are not used in the papers. I have not analyzed if the difference is statistically significant, which population groups use other channels the most, or if e-government users are more or less likely to use other channels. The reasons for this is that analysis of the qualitative data took precedence, and the quantitative analysis I had intended to conduct were far more complicated and time consuming than I had anticipated.

7.2 Statistics on channel traffic and self-service rates in UDK

As an employee of ATP's channel division, I have had full access to aggregated statistics on channel traffic, and have been immersed in an environment where there is great interest in this data. Three of my ATP colleagues are directly involved in the production of these statistics, and I have benefitted greatly from their help, not only in providing the data, but also in discussing its limitations and the implications of my findings.

In principle, there are five channels for citizens to contact UDK (calls, counter visit, website, physical mail, and digital post). However, the two largest channels by far are the telephone and the portal borger.dk. I have not been able to find detailed data on incoming mail (physical and digital), but the aggregated data shows that the amount is quite low. In terms of volume, the counter visits are negligible. Thus, I have focused on calls and website visits to UDK's family benefit sections, and to a certain extent to the housing benefit section as many single parents are also eligible for housing benefits.

7.3 Call statistics and classification

At the time of writing, UDK employs the Genesys call center system, an IP-based telephony system, which allows the collection of detailed statistics. Incoming calls are measured at three different points:

1. When calls are made to the UDK family benefit line.
2. After a welcoming message has been played to the callers, and the call has been queued.
3. Answered calls, when the caseworker picks up the call.

When referring to incoming calls in the thesis, I refer to the second level, where the callers know that they have called the family benefit division. The system collects data on aspects such as call length and dropped

calls. As I focus on channel choice and use, I have not applied this additional data in the thesis. However, a future study could test the effectiveness of welcoming messages by comparing levels two and three to calculate the share of callers who hang up after hearing these. Call length could also be analyzed and compared with the system generated events, to get an idea of the complexity of the underlying tasks, especially if this analysis was combined with qualitative studies.

Finally, please note how something, which initially seems quite simple – measuring calls - quickly gets complicated. If organizations or sections are to compare incoming calls, it is important that they define and measure the calls in the same way. Especially when there are political and economic interests at stake.

Since 2014, UDK case workers periodically classify calls. The system is hierarchical, so the caseworkers first choose one category relating to the general nature of the call, followed by a more specific classification. The caseworker can type additional information in a form, if the categories are inadequate. For paper #5, the study on the single parents' declaration I developed the classification categories. The sub-categories were created to correspond to the overall problems we knew that had caused calls related to the 2013 single parents' declaration. Figure 7 presents a screenshot from of call classification system with these categories.

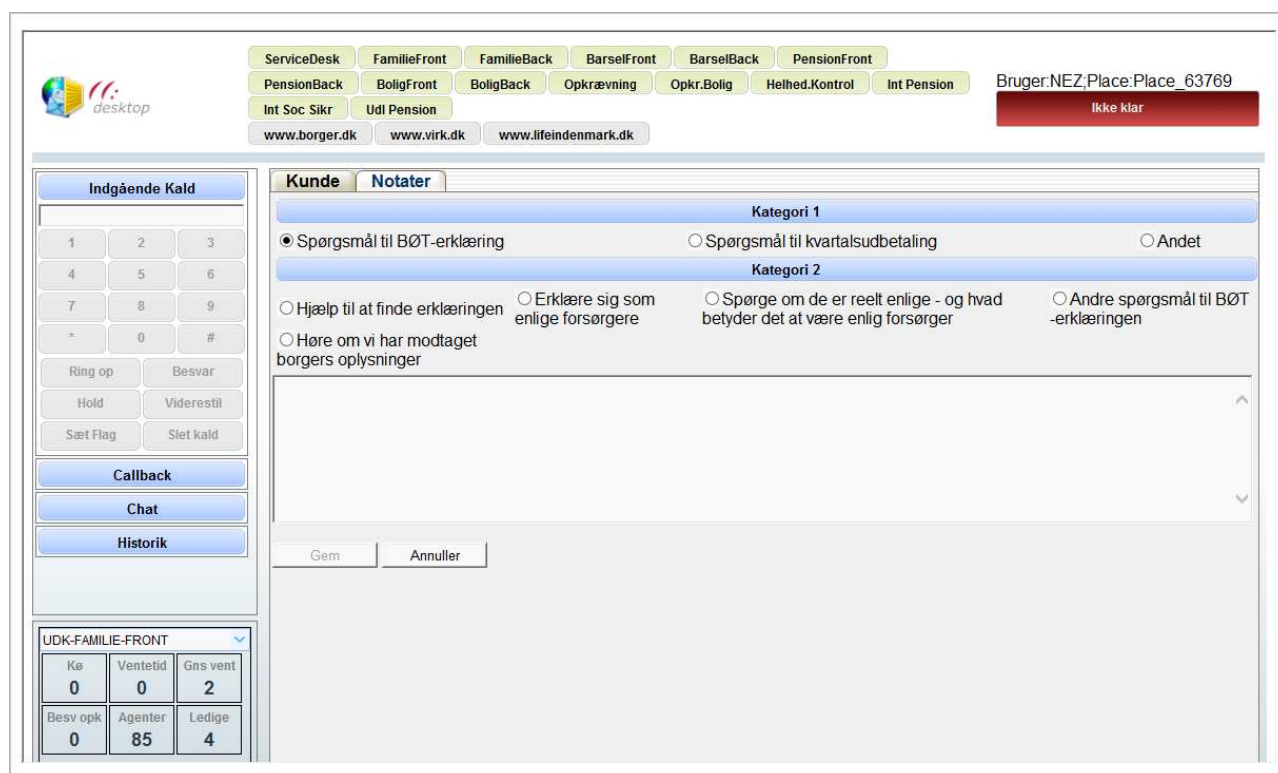


Fig. 7. Screenshot from the call classification system

It turned out that there are both technical and organizational limitations to the classification system. It only allows one answer at each category level. One finding from the call center observations is that many callers

have several questions. The caseworker has to decide which category to use, which limits the validity of the results. Although the caseworkers do use the text field, it is difficult and problematic to quantify such qualitative input. Secondly, the caseworkers have a certain number of calls they are supposed to answer. Some felt that it was stressful to spend too much time on call classification after they had completed a call as this lowered their 'production rate'. In addition to the stress that this may have caused, it might also have inclined some caseworkers to classify the calls too quickly, which again limits the validity of the results.

Due to these limitations, I have been hesitant in referring to the results from the call classification system. I only briefly refer to the aggregated results in paper #5. Moreover, I have emphasized the importance of ensuring caseworker cooperation related to call classification here. Although a call classification system has great potential for multichannel management, this example demonstrates the importance of getting the technology properly implemented in the organization, as well as the dangers of uncritically relying on the results. As of writing, it is uncertain if the technical limitations can be solved. In terms of caseworker stress, one solution could be to stop measuring how many calls they answer individually while they classify calls. Further, the classification should only be conducted when it is strictly necessary, and the caseworkers should be included in the development of the classification categories.

7.4 Preliminary studies in UDK call center

The second part of the preparation for the focus group discussion consisted of observations, interviews and informal talks with the caseworkers in UDK's family benefit call center, which is co-located with ATP headquarters. These preliminary studies took place for one week in spring 2013. When I became an ATP employee, I had to sign a confidentiality agreement, like all other employees, and promise not to reveal information about any individuals, which I might learn about. The legal division of ATP made a specific assessment of my situation and found that this co-listening did not require citizen consent. As an ATP employee, I was therefore allowed to co-listen to calls to ATP and UDK keeping the current guidelines for security, and my confidentiality in mind. Co-listening is employed at ATP and UDK as part of employees' education. Verne has conducted an expansive study of the problems related to e-government channels in the Norwegian Tax Agency using co-listening as well (2014, 2015).

While the caseworkers spoke with callers I listened in using a separate headset, and took hand-written notes. Afterwards the caseworkers explained what the call concerned and if it was a typical problem. I noted down the age and gender of the caller, the type of problem, and which channels the callers mentioned. I did not note any identifying information, nor any specific utterances from any calls. In addition, I talked to the caseworkers and interviewed two of them to get an overview of what citizens were calling about. Although the interview provided valuable insight, I have not referred it in the thesis, as my focus is on citizens.

Co-listening proved to be a valuable method to get an initial overview of some of the problems citizens face in relation to online interaction, and a great supplement to the other data sources (call statistics and call classification in particular). Moreover, this data is requested by CC scholars (Pieterse & Ebbers, 2008).

Return to call center

After the focus groups discussion were completed, I returned to the call center and presented the preliminary results to the caseworkers and their supervisors. This was useful, as the caseworker both challenged and complemented my findings, especially those that pertained to citizens calling to negotiate regarding benefits.

In October 2014, when the self-service application for the 2014 single parent's declaration was open I returned to co-listen to calls. This was to find any additional problems, which needed to be solved to further improve declaration and surrounding communication for forthcoming declarations.

7.5 Focus group discussions

Prior to the focus group discussions I had data on cross-channel traffic and a general idea of why single parents were calling, and the context of the calls. However, this information only pertains to citizens who contact UDK or access UDK's website at borger.dk. I did not have information on what happened prior to this, or about those who did not call. I wanted to gain an understanding of how single parents perceived their interaction with UDK, their use of the selected channels, and how they shared experiences and practices.

Although Domestication scholars acknowledge processes taking place outside the household, such as Haddon's study of schoolboys who swap computer games (1992), or Hynes and Rommes' study of IT courses for disadvantaged users (2005), the Domestication framework in general involves studying processes among people in and around the household. Single parents are interesting in this regard, as they are often the only adults in the household. If there were other adults in the household, the single parents would not be eligible for the benefits. In spite of this paradox, a number of Domestication studies have been conducted with single parents (Bakardjieva, 2005; Haddon & Silverstone, 1994; Russo Lemur, 2006). Domestication scholar Maria Bakardjieva who coined the term 'warm expert' told me that the high representation of single parents (women mostly) might be 'an artifact of the recruitment process' as they actively seek interaction with others, and have the freedom to decide whether to participate in such studies or not.

Nevertheless, single parents present a methodological problem. If social interaction is an important part of the Domestication process, how does one study such interaction between adults in single parent households? I decided to apply focus group discussions for this purpose. My supervisor at the time, Richard Ling, further recommended this method as 'it gets people talking', that listening to others in the same situation as yourself would encourage people to share their views. Krueger presents similar arguments (1994). By using focus group discussions, I could simulate the processes surrounding the Domestication of self-service applications.

In 2012, ATP used a segmentation model from marketing to separate their customers into five different groups, reminiscent of the Minerva model described by Dahl (1997), or Gallup’s Kompass model. My original intention was to divide participants into four or five different segments and then analyze the results across groups, especially diagonally, where the participants would differ the most (see Table 3).

Table 3. Planned focus group composition

	<i>Variable 1 +</i>	<i>Variable 1 –</i>
<i>Variable 2 +</i>	A	B
<i>Variable 2 –</i>	C	D

I conducted three focus group discussions at the IT University in Copenhagen and two at UDK’s office in the small city of Vordingborg in southern Zealand. Appendix II presents basic information about the focus group participants and composition. This division ensured that I got participants from both urban and rural areas.

Recruitment

A private company recruited the participants for the qualitative studies. To increase turn-up we wanted participants who lived within one-hour travelling distance to the locations where we held the focus group discussions. Following Krueger (1994), I wanted participants who could identify with each other and interact. I intended to do this through the questionnaire, and by recruiting single parents between the ages of 40 and 50. The recruitment company informed potential participants of the overall purpose of the project, that ATP conducted it as part of a research project, that we would serve food and drinks, and they would receive a small gift for participating. In addition, those who had driven far received travel compensation.

The next problem was how to sort participants into the four different segments (five with the middle category). Gallup has developed an application, which asks 36 questions and then provides an answer to which segment the user belongs. I wrote the questions down, and then provided the questionnaire to the recruitment company, who returned the filled out forms. I then entered the responses in Gallup’s application and decided in which focus group the participant should participate. Participants who were in the middle category were placed in the pilot focus group discussion. Some of the potential participants felt uneasy about answering the questionnaire during recruitment, I therefore decided to hand out the questionnaires in person at the beginning of the focus group discussions instead, so that I could inform participants of its purpose, assure their anonymity, and establish that they could ask questions and voice their concerns. None of the participants voiced any concerns about the questionnaires, although some found the questions a bit odd.

Ultimately, I ended up not using the survey results for three reasons. First of all the participants in Vordingborg were – according to the application – quite different in terms of their values. This made cross-

comparison of groups difficult. Secondly, such marketing methods may work at the aggregated level, but for individuals it is problematic (Dahl, 1997). Thirdly, I was concerned about the consequences of not having access to the ‘black box’ as the algorithm used to place people in the various segments based on their answers is part of Gallup’s business model. This troubled me, as I would not be able to fully utilize the model, or explain how it works when presenting findings. Finally, the focus group discussions yielded so much information, and so many suggestions for improvement, that it never seemed necessary to conduct a cross-group analysis. There was more than enough data to dig into, and the participants had lively discussions, where their values were revealed. In spirit of the interpretative research paradigm, I would be the instrument used to analyze participants, not a computer algorithm.

The idea of screening or dividing participants into groups according to values and political views could certainly yield results, if it had been better conducted. In one of the focus groups in particular, there was a lively discussion among the participants about the nature of the welfare state, and how information concerning benefits should be presented to citizens. Basically, the political division between the left and right wing was transferred to UDK’s areas, and how participants wished to have online self-service applications designed. An analysis of how ICTs reinforce existing power structures in society definitely appears merited (Danziger, Dutton, Kling, & Kraemer, 1982; Kling, Kraemer, & Kling, 1981), when one regards the results of Statistics Denmark’s annual ICT household surveys, and how education clearly impacts on the use of e-government services. However, that is outside the scope of this thesis.

The framework

I conducted the focus group discussions following the framework presented in Appendix III, which I developed while attending a PhD course in focus groups by Professor Bente Halkier at Roskilde University, who has written a book on this method (Halkier, 2007).

To stimulate interaction among the participants I developed three activity-oriented exercises for the focus group discussions (Colucci, 2007). These revolved around the use of channels for interacting with public authorities, participants’ perceptions of these channels, and finally private versus public self-service applications. A final question concerned what the perfect self-service application would look like. The original purpose of the project was to study the adoption of self-service applications. Looking back, self-service applications receive a lot more attention in the framework, than they do in the final thesis. However, even with the shift in research question and the increased emphasis on call reduction and cross-channel activity, most of the data from the focus group discussions was still useful.

The focus group discussions definitely reflect the time they were conducted which coincided with the 2013 single parents’ declaration. Halkier recommends that one starts a focus group discussion by asking a general question ‘*is there anything in particular related to [area of study] that is going on at the moment?*’ (Halkier,

2007, p. 47). The overlap with the empirical studies and the single parents' declaration means that the declaration receives a lot of attention by my participants, and in the thesis. If I had conducted the studies at a different time, this would probably not have been the case.

Recording the focus group discussions

To capture non-verbal interaction and make the transcription easier, I recorded the focus group discussions on video, with an MP3 recorder as backup. At the start of the focus group discussions, I informed the participants of the purpose of the study and my research project. I also informed them that they would remain anonymous, and any published material would be in text form only. I informed them that the video recordings would not be displayed to other than myself, my supervisors when discussing results, and possible a student helper for transcription. This was important to establish rapport with the participants. Finally, I explained that I was not a caseworker or interested in their personal cases as such. Rather, I was interested in their impression of public authorities, their use and perception of self-service applications and the channels they used in their interaction with public authorities. Following Halkier, I told the participants that they should imagine they were at home drinking coffee and talking with friends.

It is my impression that the recording equipment did not interfere much with participant interaction. The participants only look into the cameras occasionally. Moreover, they openly shared their personal histories and perceptions of public authorities. The focus group discussions took place in a pleasant spirit, often with a lot of laughing, as somebody shared their frustration with an online application, or imitated a strict caseworker. Some participants also challenged my questions and my notions of self-service. This was stimulating and rewarding, and it made my refocus from thinking of self-service as government owned technical applications to self-service as a process, where one uses all kinds of channels, including borger.dk and third party applications and websites, to get the necessary information and to ensure that the system makes the right decision regarding one's case.

Conducting the focus group discussions

At each of the focus group discussions, I had one helper present. During the pilot discussion, this was my academic supervisor, Richard Ling, later ATP colleagues helped me. The purpose of this involvement was two-fold; they assisted with practical aspects, such as looking after participants and making sure nobody were left outside, bringing tea and coffee etc. However, their participation also ensured a greater awareness of my research project at ATP, as these colleagues worked with the administration of these services. At a few occasions, they asked a few follow-up or clarifying questions pertaining to their areas. After each focus group discussion, we discussed the most prominent results and I wrote our initial thoughts down.

As moderator I sought to stay in the background, and let the participants interact freely and ask each other questions, interrupt each other, probe etc. While they were talking, I took notes on paper, and looked for queues, and areas to ask follow-up questions about. The first three focus groups were held within a nine-day

period, after which there was a three-week break until the final two focus group were conducted. During this break I watched the video recordings and reflected upon findings and my own behavior. I noticed that I interrupted too much, and occasionally missed cues from the participants. I also noticed that the participants asked follow-up questions themselves. This resulted in some minor adjustments to the framework, but especially in my interrupting less during the last two focus group discussions.

At the end of the focus group discussions, I thanked the participants for showing up, promised to send an e-mail the following week, which they could reply to if they wanted statements deleted. I also said that I would contact some of them for follow-up discussions. No one wanted to have anything deleted, although several responded and thanked me for a pleasant experience, and some volunteered for follow-up interviews.

A note on the legal aspects of benefits for single parents

According to the Danish guidelines for research ethics in the social sciences researchers must consider if their studies can cause harm to that are studied (Uddannelses og forskningsministeriet, 2014). Moreover, information, which can identify participants, must be removed. One issue that came up in relation to this was the participants' involvement in relationships. Single parents who receive additional children's benefits for being single are legally allowed to be in a romantic relationship, as long as they do not have a shared economy or live together under marriage like circumstances. This is something of a legal grey area however, as there are no explicit rules for when a person is as a single parent, only when one is not a single parent. Rather, the authorities provide general guidelines and examples.

I had not intended that we would discuss participants' romantic backgrounds or whether they were currently in a relationship, as my focus was elsewhere. However, this was obviously important to some participants, and several brought this up by themselves. They also discussed their backgrounds with each other during the food-break. I did not pursue this issue, and have not analyzed it in-depth, or quoted any of the participants regarding their romantic involvements in the papers. This is certainly an interesting issue, and studies *could* be conducted on how single parents perceive these rules, how some get around them in everyday life, and the tension between the romantic perception and legal definitions of being in a relationship. However, this is outside the scope of the thesis, and not what I briefed the participants the empirical studies would be about.

7.6 Follow-up interviews and observations

The follow-up interviews and observations took place six to twelve months after the focus group discussions in the participants own homes. I had planned to conduct all of them in December 2013, but had to postpone, first due to sinusitis, then due to paper deadlines. The strategy of conducting the focus group discussion first to build rapport with the participants prior to inviting myself into their homes worked. For the follow-up interviews, I contacted 10 of the participants, one did not reply, while the remaining nine all agreed to

participate. The follow-up interviews consisted of three to four parts depending on when they were conducted. They were recorded with an mp3 player. In addition, I made hand-written field notes.

The purpose of the follow-up interviews was twofold. It allowed me to go in-depth with certain topics that participants had brought up during the focus group discussions, and to ask additional questions on areas and missed cues, that I had become aware of when transcribing and analyzing the data. Secondly, by conducting the studies in the household where the single parents' interaction with UDK occurred, I had access to a lot of contextual information, which provided richness and detail to my findings. It also served as inspiration for additional questions, and an opportunity to discuss tentative findings with the participants.

I selected the participants for the follow-up studies to ensure maximum variation along several dimensions:

- Preference for e-government channels and traditional channels
- Experience with the benefit system / administrative literacy, by using how long they had been single parents as proxy or statements made during the focus group discussions
- Warm experts, either by being warm experts themselves or mentioning getting help from them during the focus group discussions

Semi-structured interviews

The interviews lasted between 30 minutes and two hours, depending on how talkative the participants were, and what we had agreed on beforehand. Using a semi-structured questionnaire offered some structure, while also allowing me to ask additional questions about topics that arose during the interview, and for the participants to bring up topics that were important to them (Kvale, 1994).

Although the questionnaires varied somewhat based on the participants, there were several recurring themes. One of the questionnaires used in the follow-up interview contains the following themes.

1. Introduction, what has happened since the focus group discussions?
2. Participants history as single parent, and historical interaction with public authorities
3. Experience with ICT's and use of web-banking and other online self-service applications
4. Where, when and how does interaction with public authorities take place, which channels are used?
5. Perception of public authorities, is it possible to influence case outcome or negotiate?
6. Thoughts on mandatory online self-service
7. Warm experts, helping or getting help from others

Observations

In addition, I conducted a series of exercises with the participants. These took place in front of their computers, and related to their interaction with UDK concerning benefits, while I observed:

1. Finding the benefits a single parent is eligible for

2. Finding information concerning benefit tariffs
3. Finding information concerning benefit frequency
4. Reading one's digital post

The exercises were not usability studies, and not meant to reveal design errors in the online applications. Rather, their purpose was to provide an overall insight into participants' ICT skills and administrative literacy, their habits for interacting with public authorities, and as a supplement to the interviews, the underlying values informing their channel choice and use.

The exercises were conducted as simplified thinking-aloud tests (Nielsen, 1993), where the participants spoke aloud and explained their actions while they took place. When they forgot to say what happened, I asked them. Nielsen notes that while thinking aloud is a poor method for performance measurement, *'its strength is the wealth of qualitative data it can collect from a fairly small number of users'*, and that it can produce quotes to make reports memorable (Nielsen, 1993, p. 195).

While I informed participants that we would be using the computer, I did not instruct them what to do, unless they were stuck. Most of the exercises revolved around information, which is available at borger.dk. For some of the tasks, I did inform the participants to start at borger.dk, although not where. As I reflect upon these observations today, and knowing that third party websites are important resources, I wish that I had not informed participants that they should start at borger.dk at all. I should not even have told them to fetch their computers. However, even so, participants quickly turned to Google, and from there to other third party websites when problems arose, as they had also told me in the previous studies. I also wish I had recorded some of the sessions on video, as it can at times be hard to follow the conversation, when participants forget to say exactly what they are doing. Nevertheless, this relatively simple exercise yielded a lot of useful information, especially when I discussed it with my colleagues at ATP, who could supplement with web-statistics from Borger.dk.

There is a risk that participants' actions are influenced as they know they are observed. However, the observations were not the only type of studies conducted, and the data generated here is triangulated by data from other sources. It is my impression that observing the participants made them try harder than they normally would have to solve the tasks in question. In the next section I reflect upon using mixed methods.

Testing and discussing letters for the 2014 single parent's declaration

In the interviews that took place in the spring and summer 2014, I also tested the revised letters for the 2014 single parent's declaration. This letter testing followed the same procedures as the testing at ATP, as a quick and dirty usability test of the letters (Nielsen & Landauer, 1993; Nielsen, 1993). The participants were first asked to read the 2013 and 2014 letters and then asked several questions regarding tasks related to the

declaration. Then they were asked to compare the letters, and if there was anything in the letters that they did not understand, or anything, which should be clarified.

The participants had talked about the single parent declaration in the focus group discussions. Therefore, they could be aware that the 2014 letter was influenced by my studies. Although I did not tell the participants, that I was one of the writers, they knew that I might be involved in its creation. Their answers and views of the 2014 letters may have been affected by this, and they may have been less inclined to criticize the 2014 letters. This must be taken into account when regarding their statements, which clearly favored the 2014 letters. However, we also tested the letters with other participants at ATP, which did not know our involvement, and they were also in favor of the 2014 letters.

A presentation of services from other countries and thoughts for improvement

At the end of the interview, I presented my initial suggestions for improvement of UDK's self-service applications. I also presented a payment (benefit) finder from Australia, which seemed to address a lot of the criticism my participants had of borger.dk, especially the silo-problem and un-appealing design. A fellow Dutch scholar, Bram Klievink, introduced me to Australia's Centerlink website, during the stay abroad in the Netherlands in autumn 2013.

The purpose was to informally round off the interview, and to get participants reactions to existing services and initial thoughts for improvement. It also served as a way to bring up topics that we had forgotten during the interview. I informed the participants that although the formal part of the interview was over, I would keep the mp3 recorded turned on. It has been my experience that informal discussion at the end of an interview often generates valuable insights. These informal discussions turned out to be quite useful in terms of getting participants' reactions to my initial findings and suggestions. Some participants would gladly discuss and suggest possible improvements, and not least to offer their thoughts on my suggestions for improvements.

7.7 Participation in ATP meetings and presentations

As an Industrial PhD student, I have been a full-time employee at ATP, although I have only been present there part time. For three years, I have participated in division meetings, team meetings, monthly supervisor meetings, half-yearly briefings by the deputy director and director general of ATP. In addition, I have conducted numerous presentations and discussions across ATP and UDK, and held an unknown number of regular meetings, chats while we were getting coffee, joint lunches etc. Section 12 presents an in-depth reflection of how the Industrial PhD setup and being an ATP employee have influenced the project.

Finally, in relations to the improvements surrounding the single parent's declaration I participated in a number of task force meetings in the early spring of 2014 and finally evaluation meetings in early 2015. This provided me with direct hands-on experience in multichannel management, and the challenges that lie in

inter-and cross-organizational collaboration. Paper #5 describes this experience. While the thesis focuses on channel choice at the individual and group level, the participation in the task force presented an opportunity to focus on multichannel management at the organizational level. It is important to note, that I had not planned this paper initially. Rather, it was the result of me being an ATP employee, and the single's declaration representing an extreme case; being successful in terms of online adoption rates, but unsuccessful in terms of citizen satisfaction and call rates. We improved the communication as best we could, and it was a great opportunity to conduct before after studies.

7.8 Dropped studies

Over the course of the project's development three intended studies were dropped, while others were added. This section briefly discusses the reasons why.

Statistics on the Danes us of ICT's and self-service applications

I had originally intended to get a statistical overview of the Danes' use of e-government and traditional channels from multiple sources. However, for several reasons I decided not to include most of these.

Although I used some of the data from Statistics Denmark's 2013 Household survey (Statistics Denmark, 2013), most of it was edited out due to paper length restriction, and because I had more specific data from UDK. However, the data is still unpublished, and could form the basis of a new paper (paper #10). I may have the questions repeated in 2016, to create a time series and statistically compare the Danes use of e-government and traditional channels before and after the mandatory digitization.

Local Government Denmark measures channel traffic to the municipalities in a two-week period twice a year, and publishes the data as part of the 'KomHen' project (Kommunernes Landsforening, 2013, 2014). The measurement is conducted manually by caseworkers in the 98 municipalities. Most of the data is presented in shares only, and new indicators have been added over the years. This makes it difficult to create times series, and impossible to get an overview of the volume of traffic. Due to this, and the validity issues from having hundreds of people generating the data, I did not include this source.

The Agency for Digitization has an application, which counts the use of national, regional and municipal self-service applications, which are accessible via borger.dk. The application uses a script to count visits to the first web-page of a self-service application (when the process starts) and the last page (when the process is completed). By comparing this data, it is possible to calculate completion rates and completion time. This is potentially a very useful source of information. However, although the Digitization Agency insists that the application *counts* correctly, this does not entail that the numbers *are correct* (Tynell, 2014). If the application is not correctly installed, the numbers will be incorrect. When my ATP colleagues and I studied the data on UDK's self-service applications, we found that borger.dk reported far lower completion rates than our own data showed. Therefore, I decided not to include the data from borger.dk in the thesis.

Diaries

I had originally intended to hand out diaries to the participants, which they could use to document their interaction with UDK in the period leading up to the follow-up studies. This is a common method in media studies, especially those concerned with audience research (Gunter, 2000; Haddon, 1993). However, I decided to drop this method as the focus group discussions and channel traffic data revealed that single parent's interaction with UDK is quite rare. In addition, the participants had busy everyday lives, and several of them stated that their interaction with UDK was quite stressful. I did not want to put more tasks on my participants' plates, and I doubted the validity of the diary entries in this context. Thus, it made more sense to have participants solve a series of task related to the benefits, while I observed.

An analysis of interaction on third-party websites

During the follow-up interviews and observations in particular, several participants mentioned that they looked for information concerning benefit rules and eligibility on third party websites. Inspired by this I conducted web-searches using terms such as 'single parents', 'benefits for single parents' etc. In this way, I found a series of websites where single parents and others discussed not only UDK, but also other public authorities, and discussed benefit eligibility and strategies for interacting with public authorities. In terms of the relationship between people's perceptions of public authorities, their reactions to the mandatory e-government strategy, and their channel choice and public service encounters, this was a gold mine.

Therefore, I planned to expand the first paper on warm experts with another on online warm experts. The inclusion of online warm experts makes sense in relation to the Danish e-government strategy, where citizens have to become their own caseworkers. Looking for information online and getting advice from other citizens seems like an obvious response to the state making e-government services mandatory. It also fits well with the shifting emphasis of self-service as applications to self-service as a process, and the notion that people shape technology to their own needs. So why drop it?

A fellow PhD-student, Sander, who is doing a thesis on political debate on Facebook, told me that such a study was a massive undertaking worthy of its own thesis. He also said that there are severe methodological challenges in getting information from Facebook, where a lot of the online interaction occurs. The second reason is that I am an employee of ATP, a self-owned institution responsible for administering UDK. Some of the actions and strategies discussed online are in a legal grey area, and casting light on these could get people in trouble. There are also the difficulties in getting approval of participants to quote their statements, especially in case of old accounts. In the end, the conflict of interests were too strong. In my opinion, such a study belongs within basic research, rather than applied research financed by the private company, which administer the authority it concerns. Given the lack of critical studies within e-government research (Berger, 2015; Madsen, Berger & Phythician, 2014), and lack of studies on citizens' reactions to mandatory e-government in general, such an analysis seems merited.

Observations of warm experts interacting with single parents

After I had conducted the follow-up interviews and gathered more data on the relationship between single parents' and their warm experts, I considered doing a third set of studies with both the warm expert and learner present. After all, I claim to be studying the social processes whereby people's perceptions' of mandatory e-government channels are shared and shaped. And the qualitative paradigm, and the Domestication framework, emphasize that the importance of studying the phenomena in question in its natural context (Blaikie, 2010; Haddon, 2011).

The reason why I decided to drop it was simple: time. The last of the follow-up interviews were conducted in the summer of 2014. At that time, I had one published conference paper, and a year to go. Remembering the advice of a good colleague, Nalini Kotamraju, that '*a good thesis is a done thesis*' and not wishing to end up asking Kvale's 1,000 page question (Kvale, 1994, p. 176), I dropped it.

7.9 Data analysis

Analyzing the data on channel traffic

The statistics on voice-calls to UDK's family benefit section and website visits to borger.dk was analyzed using MS Excel to get an overview of citizens' contact patterns to UDK prior to conducting the empirical studies. I combined the channel data in a spreadsheet measuring traffic per weekly. Figure 8 presents this data. Then I visited UDK's family benefit section at borger.dk and looked for events occurring in the periods where there traffic increased or decreased. Combining the data traffic with UDK generated events, turned out to be useful, both to inform the qualitative empirical studies, but also as a visual aid during presentations.

There is an increase in traffic every quarter, when payments are made, and a spike in April – May 2013 when the single parents' declaration was running. On housing benefits were payments are monthly, there is a monthly increase in channel traffic. Thus, it appears, that the system generated events 'payments' and "the single declaration' generate incoming traffic. My fellow co-workers and UDK caseworkers agreed with this. To study this further, I asked how the participants experienced these events, and what the problems were.

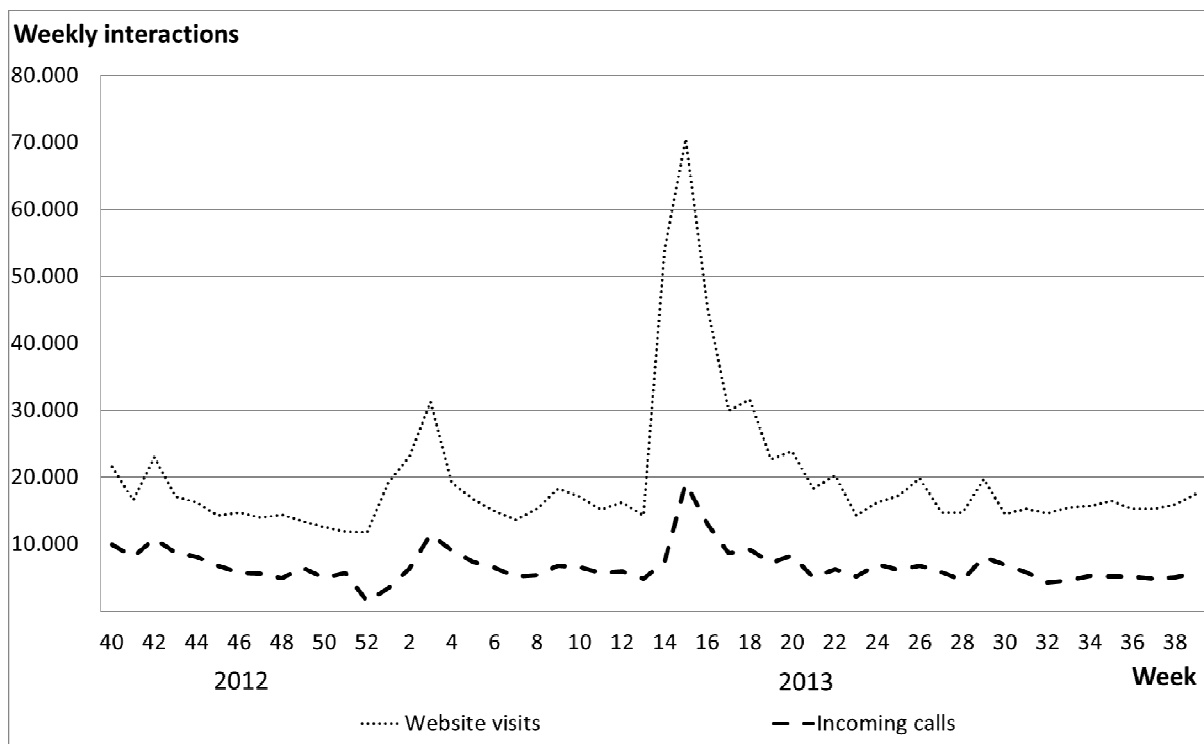


Fig. 8. Citizen initiated interactions with UDK through borger.dk and telephone calls 2012-2013

Transcription

After each empirical study, I transcribed the recorded data using the software F4 and a foot pedal. I did this myself, which not only provided great insight into the material, but also offered valuable lessons for how to conduct qualitative interviews and facilitate focus group discussions. The most valuable lesson was not to interrupt, and use silence as a means for prompting.

The five focus group discussions and six of the nine follow-up interviews have been completely transcribed, while I have partly transcribed the remaining three interviews. The transcriptions from the focus group discussions alone encompass 260 pages (single spaced, font size 11-12). Due to the amount of data, I focused on transcribing whole words, and leave out body language, intonation, non-verbal utterances etc. unless I perceived this as being particularly important.

Analyzing the transcriptions

The transcribed material was imported into ATLAS.ti for analysis (Friese, 2012). During analysis of the transcriptions, I simultaneously watched or listen to the recordings. The analysis of the data took place in several steps encompassing coding, memos, the development of additional research questions and displays, and – in some cases - brief participant biographies. During the follow-up interviews, I presented my preliminary findings to participants to ensure that they were accurate (Creswell, 2014).

Coding

'Coding' refers to the process of assigning a concept (a code) to a selection of data (Strauss & Corbin, 1998). It is a common method for qualitative data analysis. I coded the written transcriptions in several iterations and in different manners, mostly from September 2013 to August 2014. To aid this process I attended the PhD course '*Digital Analysis of Qualitative Data*' in November 2013. This was helpful, but I still found the coding process to be somewhat messy, difficult, and both fascinating and frustrating. This was partly due to the sheer amount of data, and partly due to the never-ending ideas, possible explanations, and conflicting views, which kept appearing.

The transcriptions informed top-down by concepts from CC literature, Domestication theory and my research questions, but also through *open* and *axial coding* thereby letting themes and aspects appear bottom-up from the data (Strauss & Corbin, 1998). In the open coding process, I also applied *in-vivo* coding, where the names of codes came directly from participants' statements (Friese, 2012, pp. 73–74). Thus, the coding took place in a dialectic process between the theoretical framework, research questions and data.

After each round of coding, I grouped the codes into overall categories such as channels, problems, skills, tasks etc., and added, deleted and combined codes to keep the total amount below 100 (Friese, 2012). To create an overview, the main categories were color coded into areas such as channel types, problems, perception of the public sector, and according to concepts from Domestication studies. Code families combined codes relating to aspects of the Domestication process:

- *Appropriation* – reactions to introduction of the mandatory e-government strategy, ways of personalizing channels and statements regarding personalization
- *Objectification* – physical and virtual objects, media, channels, websites, documentation
- *Incorporation* – events in everyday life, routines, system-generated events
- *Conversion* – statements regarding the public sector such as trust and distrust, values, good and bad experiences, emotions

According to Domestication theory, the concept of *the moral economy of the household* influences all four aspects of the Domestication process (Silverstone & Hirsch, 1992), but I found it to be mostly related to the conversion aspect. This may be because my study revolves around the process of self-service and online self-service applications, which are non-tangible and non-purchased, rather than physical objects.

Memos

During coding and analyzing, I created memos in ATLAS.ti and MS Word of initial findings, possible relations between concepts, and topics to ask for during follow-up interviews. These memos grew into theories and some become part of early drafts for the research papers (Glaser & Strauss, 1967, pp. 107-108).

Displays

To structure the findings, and explore the relationship between key aspects in the data, I developed a display, following Dahler-Larsen (2008). Table 4 divides participants according to channels used, and then presents various aspects of the analysis. This was difficult as some participants belong in several categories depending on the task, and certain categories, such as where to look for help, grew into entire papers of their own. The display was useful in terms of getting an overview of the data, and also created an awareness of missing data, as only some participants brought up the respective issues in the focus group discussions.

Table 4. Display of relationship between key aspects in channel choice

Channels used	Online primarily	Online first, then other	Telephone	Counter first, then other	Counter only
Participant					
Problems faced					
Benefit of chosen channel					
Perception of benefit system (objective or subjective)					
Perception of public authorities					
Where do they look for help?					
Efficacy – perception of ability to complete task					

Research questions

Finally, the analysis was also informed by the respective research questions, and related sub-questions, which covered various topics. Following the advice of Professor Margrethe Aune at NTNU, I also used the sub-questions to structure papers #4 and #5.

8. Applying mixed methods

Bryman (1995, 2006) describes the ‘paradigm wars’ as an intense debate (ironically mostly among qualitative researchers) regarding the properties and virtues of qualitative and quantitative methods. These were said to belong to a positivist paradigm and an interpretivist paradigm, with separate underlying research philosophies. Blaikie presents an excellent in-depth discussion of how these paradigms are incommensurable (1991). He argues against the use of the term ‘triangulation’, which is applied in social science as a means to validate data by combining qualitative and quantitative methods. Blaikie notes that the term ‘triangulation’ originates from surveying, where it entails producing geographic data by repeating the same method from different positions. ‘Triangulation’ in social sciences in contrast, entails combining different methods, which have their own sets of ontological and epistemological assumptions. Blaikie ends his discussion by keeping an option open for using different methods over time in a sequential manner. Bryman calls for paradigm peace (2006), and claims that a more pragmatic position is starting to appear among social scientists, where research methods are combined, and researchers focus on the best way of answering their research questions.

8.1 Methodological eclecticism and mixed methods

Hammersley criticizes the view that qualitative and quantitative approaches are incommensurable for being simplistic, and argues that these approaches are not as fundamentally different as has previously been claimed, nor are they internally homogenous and consistent (Hammersley, 1996). He presents three different ways in which qualitative and quantitative research methods can supplement each other:

- **Triangulation**, where *‘the findings obtained from quantitative and qualitative techniques are used to check each other on the basis that they are likely to involve different sorts of threat to validity.’* (Hammersley, 1996).
- **Facilitation**, where *‘one approach acts as a source of hypotheses, or as the basis for the development of research strategies, in the other. (...) Alternatively, the findings of experiments or survey results may serve as a basis for the initial framing of research problems in qualitative work and even as a source of hypotheses to test.’* (Hammersley, 1996).
- **Complementarity**, where *‘the two approaches provide different sorts of information that complement one another.’* (Hammersley, 1996).

Hammersley notes that such an eclectic view emphasizes the practical character of research, rather than the paradigm view, which claims that there is a linear development from first choosing research philosophy and then letting this inform one’s choice of methods. Rather, the research environment influences the researcher who inherits research philosophies and methods in combination and simultaneously. Hammersley further states that: *‘The decisions that have to be taken in research necessarily rely upon a variety of practical considerations regarding the particular goals of the research, the resources available, the obstacles faced, and so on.’* (Hammersley, 1996, p. 168).

8.2 The application of mixed methods in the thesis

The research design for this thesis evolved, as I learnt about data sources, gained insight from studies, and discussed the project with supervisors and colleagues. However, the overall structure was planned early on. This consisted of conducting an initial quantitative analysis (1), followed by focus group discussions (2), and individual interviews and observations in participants' homes (3). Then there was an intervention, where we changed the communication regarding the single parents' declaration. Finally, a phase, where I studied the impact of the intervention. The intervention and follow-up study were not originally planned. Table 5 present the four phases of the empirical studies and their purpose following Hammersley.

Table 5. The overall phases of the empirical studies, their purpose and relationship

Phase	Purpose	Eclectic forms	Methods
(1) Pilot study	To find patterns in channel traffic, and the events and topics that generate calls	<i>Facilitates</i> later studies; Call events and topics found through <i>complimentary</i> methods, verified and <i>triangulated</i> by caseworkers	Simultaneous quantitative and qualitative
(2) Focus group discussions	To explore and explain single parents' Domestication of self-service applications To explore how single parents perceive particular events and topics which generate calls, and how calls can be reduced	In depth study which <i>complements</i> pilot study; <i>Facilitates</i> follow-up interview, by using results to find participants; <i>Facilitates</i> 2014 call classification by finding and classifying issues, which cause calls	Qualitative
(3) Individual interviews and observation	Same as phase 2, plus to explore single parents actual use of e-government channels	<i>Complements</i> previous studies; verifies participants statements of channel practices through observation (<i>triangulation</i>)	Simultaneous qualitative
(4) Study of 2014 declaration	To collect data to study the impact of the intervention and changes to the single's declaration. To find additional issues which cause calls.	<i>Complementary</i> methods;	Simultaneous quantitative and qualitative

In this section, I have presented and reflected upon the use of mixed methods. The next section discusses the application of theory in the thesis.

9. Theoretical framework

In this section I first briefly discuss what constitutes theory, followed by theory in e-government and channel choice (CC) studies. Finally, I present the two theories external to the e-government field, applied in the thesis; Domestication theory and Media Richness Theory.

9.1 What is theory?

What constitutes theory is a massive topic, to which numerous scientific works are devoted. Blaikie provides multiple definitions, and sums up that *'theories provide explanations of some aspects of human experience that form non-random patterns'* (Blaikie, 2012, p. 124). If we return to Blaikie's types of research questions, then theory will allow us to answer 'Why' questions and offer an explanation to why people behave the way they do, while models allow us to answer 'what' questions, i.e. what are the factors or concepts, which influence people's behaviour, and what is the relationship between these. Blaikie's summary is in line with Webster and Watson, who state that the theoretical explanation is the most important factor to scholars:

Models and propositions capture relationships between variables, but do not, on their own, represent theory (...) The reasoning for propositions may come from three main sources: theoretical explanations for "why", past empirical findings, and practice or experience. The why or logical reasoning is the most important component of the explanation. It must always be part of any justification. (Webster & Watson, 2002, p. xix)

Following Mathiassen, Chiasson, & Germonprez's analysis of the structural components in action research (2009) and Bannister and Connolly's analysis of the use of theory within e-government (2015), I distinguish between theories that relate directly to, and are developed from, e-government and CC studies, and independent theories applied by e-government and CC scholars, but have been developed by others.

- F_A: Frameworks *'related to concepts and ideas found in the literature about the area of concern (A)'* (Mathiassen et al., 2009, p. 7). This is similar to what Bannister & Connolly refer to as *'native theory'*.
- F_I: *'general concepts and theories that are used to inform the study independent of A'* (Mathiassen et al., 2009, p. 7). This is similar to what Bannister & Connolly refer to as *'imported theory'*.

As with e-government and CC studies in general, I mostly rely on imported theory (F_I) in the shape of Media Richness Theory (Daft & Lengel, 1986) and Domestication theory (Berker et al., 2005; Lie & Sørensen, 1996; Silverstone & Hirsch, 1992). They are presented in the following sub-section.

9.2 Theory and research philosophy and in e-government studies

This section outlines the use of theory and research philosophies in e-government studies. First, however, I will define e-government and briefly present its history and that of its research field.

Definition of e-government

Margetts begins her presentation of public management and e-government, by defining the latter as: *'the use by government of digital technologies internally and externally, to interact with citizens, firms, other governments, and organizations of all kinds'* (Margetts, 2009, p. 114). My perception of e-government is similar to Margetts' with one exception. The technologies that are facilitating the internal and external interaction are internet borne; websites, e-mail, digital post, self-service applications etc. Thus, I will add 'internet technologies' to Margetts definition:

E-government can be defined as the use by government of digital technologies – especially internet technologies - internally and externally, to interact with citizens, firms, other governments, and organizations of all kinds.

This definition encompasses both the internal aspects of e-government, for instance communication between employees, as well as government-to-citizen (G2C), government-to-business (G2B) interaction, and government-to-government interaction (G2G). The definition is also value-free in that it does not assume that e-government has a particular outcome. In our literature review of e-government (Paper #1), one of the aspects we studied was if the authors provided a definition of e-government. We found that this was mostly the case in the older papers. Moreover, we found a great deal of variation in how e-government was defined. Most authors would probably agree with the above definition. Some add another aspect to the definition by stating that e-government will lead to certain positive effects; transforming government and achieving increased efficiency, effectiveness and citizen satisfaction (Madsen, Berger, & Phythian, 2014). This adds a prescriptive layer to the definition of e-government, which influences government strategies and goals (Verdegem & Verleye, 2009). For an in-depth discussion of four types of e-government definitions, and further elaboration on the descriptive and prescriptive aspects see (Grönlund, 2010).

Models of e-government

Another important aspect of e-government concerns what the interaction entails. Chadwick and May conducted a study of the development in policy papers on e-government from the EU, US and UK, and present three different models of G2C interaction (2003), which we also included in our literature review:

- **Managerial** – An offspring of e-commerce and New Public Management this model regards e-government as a tool to improve the 'business' of governance, to make it faster, cheaper and increase citizen satisfaction.
- **Consultative** – Whereby governments can use IT to 'pull' information and opinions from citizens in order to improve policymaking. This is the first step towards improving democracy through the use of IT.
- **Participatory** – Here citizens fully take over the role of government, facilitated by IT. This model has been labeled utopian, and cyber-optimistic by critics (Chadwick & May, 2003).

Chadwick and May found that while all three models were initially present in government policies, the managerial model always took precedence in the end. This thesis is firmly grounded in the managerial model of e-government.

A brief history of e-government and its research field

Chadwick and May end their study with a great footnote, indicating the long history of digitization:

'Computers of one kind or another have been seen as solutions to the problems of the public sector since Herman Hollerith's invention of punchcards to analyze the 1890 U.S. federal census data' (Chadwick & May, 2003).

Margetts traces the use of computers in government back to the 1950, when they were used by US and UK for military and scientific purposes (Margetts, 2009). Initially, computers were used to improve internal administrative tasks, such as the automation of information processing for public taxes. With the widespread diffusion of the internet in the second half of the 1990's, government organizations also began to use computers for communicating with citizens. The transition to e-government, and internet borne communication channels, is partly fueled by citizens and politicians' expectations based on the success of private companies. E-government was realized by combining the technological possibilities which the diffusion of the internet offered, with public policies, especially New Public management *'a cohort of organizational restructuring changes based on importing concepts from business practices and public choice influenced theory into the public sector'* (Margetts, 2009, p. 118). Pieterse presents an overview of the development in how governments interact with citizens through four channel positioning strategies (Pieterse, 2010), they are outlined in section 11.3 below.

Heeks and Bailur (2007) state that e-government as a research field originates from public administration and information systems. It has always had a strong practitioner orientation, and attracts researchers from numerous disciplines (Heeks & Bailur, 2007). Since its inception in the late 1990's, the e-government field has grown into a considerable research area. The paper searches conducted for the e-government literature review, showed a considerable growth in the field from 2000 onwards, see Figure 9. below.

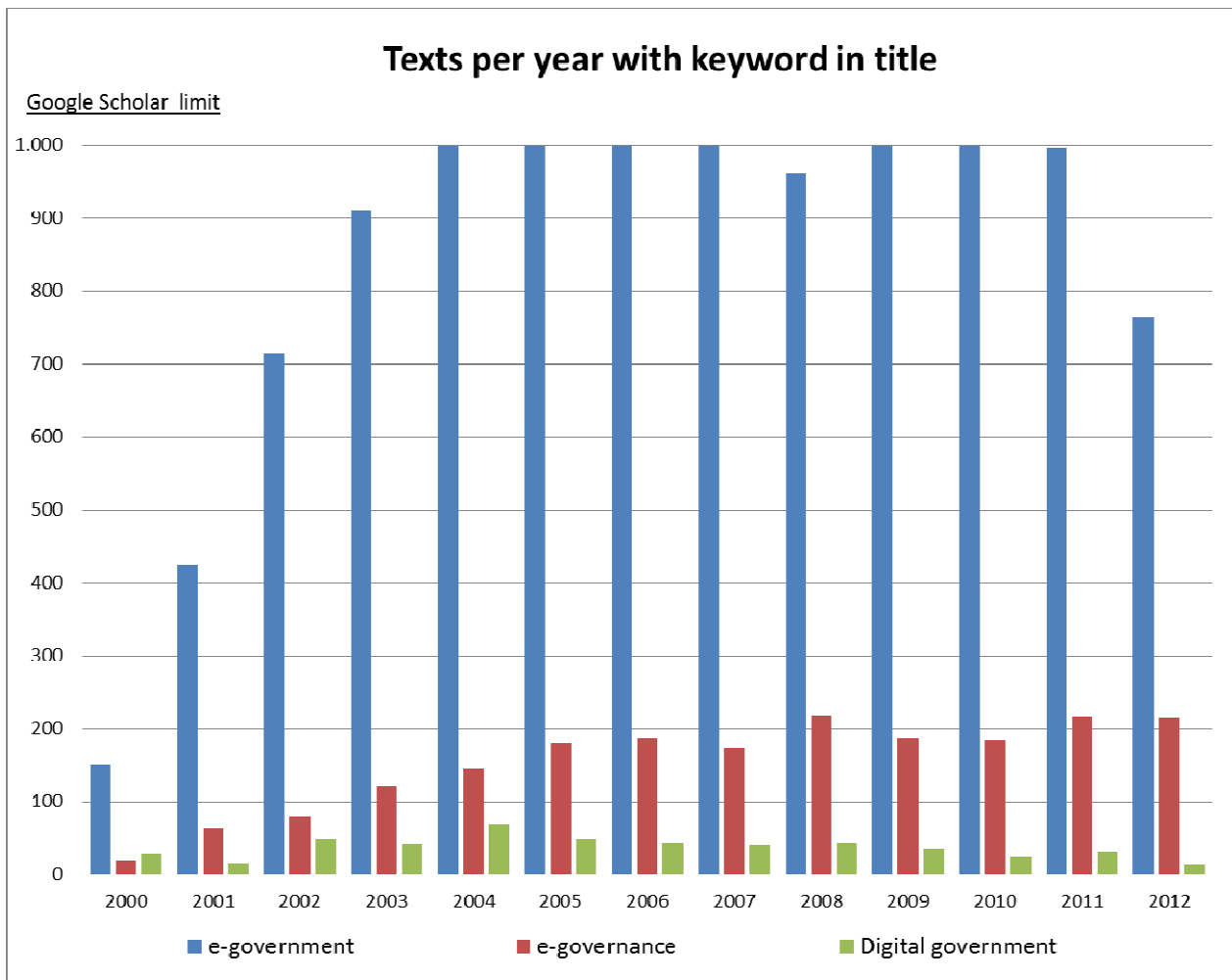


Fig. 9. Published texts with e-government, e-governance, or digital government in the title

The latest update of the Electronic Government Reference Library from July 2015 contains references to 7,500 English-language peer-reviewed publications (Scholl, 2015). According to the library's owner, Hans Jochen Scholl, around 1,000 publications are added annually. Any discussion of e-government studies must consider this, and in-depth reviews therefore tend to rely on samples, or cover specific areas, periods, countries, or outlets, rather than the entire range of publications (Madsen, Berger, & Phythian, 2014).

Theory in e-government

In a scathing literature review of 84 papers published in three leading e-government outlets from 2001-2005, Heeks and Bailur criticize e-government scholars for –among other things - not using theory, and not building upon each other's work (Heeks & Bailur, 2007). Heeks and Bailur distinguish between seven levels of knowledge frameworks, which they use to classify the studied papers. They find that only one paper is theory-based. The remaining are framework based (10 papers), model-based (29 papers), schema-based (8 papers), concept-based (4 papers), category-based (22 papers) and finally non-framework based (10 papers).

As Heeks and Bailur's analysis only covered e-government studies from 2001-2005, I decided to update it with a newer batch of papers, covering the entire decade (Paper #1). It was our initial intention to cover the same areas as Heeks and Bailur, including the use of theory. However, we found it hard to distinguish between some of these levels, especially between theory- and model-based work, and omitted it from the study. One particular problem was how to label studies based on behavioral **models** such as *The Unified Theory of Acceptance and Use of Technology* (Venkatesh et al., 2003), and *The Theory of Planned Behavior* (Ajzen, 1991). Should we regard these as conceptual models (not theory) or means to explain human behavior (theory)? Today, I would follow Webster and Watson (2002) and Whetten (1989), and classify these adoption models as theory, as they discuss the relationship between certain factors, but also offer explain for *why* these factors are related.

In a response to the criticism of lack of theory in e-government, Bannister and Connolly examined this area (2015). They distinguish between native and imported theory, and define theory as that which both explains and predicts. Bannister and Connolly find a frequent use of imported theory within e-government studies (to which they include adoption models), but very few instances of newer native theory. The only example of such native e-government theory are the web-stage or maturity models (Layne & Lee, 2001). The web-stage model describe and predict the development within public authorities' use of websites. It covers four stages (Layne & Lee, 2001, p. 124) of increasing technological and organizational complexity:

- **Catalogue.** Government organizations establish web-presence and provide information online
- **Transaction.** Online forms and databases allow for the online transaction of information
- **Vertical integration.** The online systems are integrated within a government organization
- **Horizontal integration.** Systems are integrated across organizations and functions, and provide 'real' one-stop services for citizens

Layne and Lee's paper is the most cited work within e-government studies. However, this model and similar, are also widely contested, and labelled as 'technologically deterministic' and 'cyber-optimistic' as the authors predict that the technological and organizational development is inevitable, and can be attributed to technology, rather than other factors such as its organizational implementation (Madsen et al., 2014). Paper #1 presents a discussion of technological determinism and optimism within e-government studies based on a framework by Rowe and Thomson (1996), which Heeks and Bailur also applied in their analysis. Numerous studies have been devoted to expanding (Andersen & Henriksen, 2006), criticizing (Coursey & Norris, 2008), and reflecting upon these models (Lee, 2010).

9.3 Theory use in the channel choice and multichannel management literature

The channel choice (CC) field in e-government is quite small, which makes it much easier to provide an extensive overview of it. Paper #2 presents a structured literature review of channel choice studies within e-government following Webster and Watson (2002) and Schlichter and Kræmmergaard (2010). In contrast to paper #1, we have attempted to cover all CC papers, albeit with a few restrictions to focus the study. Thus, we include peer-reviewed papers published within the last decade, written in English, and which revolve around the use or management of more than one channel in a citizen-to-government context.

If we apply the distinction between native (F_A) and imported theory (F_I) to the CC branch, we find that, as with e-government in general, there are multiple imported theories and few native theories. Most of the studies on individual citizens' CC are informed by variance theories, and a few are informed by process theories. According to Webster and Watson '*Variance theories incorporate independent variables that cause variation in dependent variables. In contrast, process theories use events and states to help explain dynamic phenomena*' (Webster & Watson, 2002, p. xix). The variance theories explain the variance in citizens' choice of channels and satisfaction with the encounter, caused by underlying factors such as task complexity, demographics, and situational constraints. Table 6. Below presents these. Broadly speaking, these theories are imported from media science, technology adoption studies, and marketing.

Table 6. Theories and variables in Channel Choice studies

Variable	Examples of indicators	Theory
Channel characteristics	Multiple cues Level of interactivity Perceived ease of use Perceived usefulness	Media richness theory, marketing theory, technology adoption models
Task characteristics	Type of task at hand Complexity of problem Ambiguity of information	Media richness theory, uses and gratifications research
Personal characteristics	Socio-demographics (age, gender, race, education, income) Experience with channel, habits Trust in public authorities	Digital divide literature, technology adoption models, channel expansion theory,
Situational constraints	Availability of channels Price Distance to channels	Marketing theory,
Satisfaction	Satisfaction with channel Satisfaction with service encounter Satisfaction with previous encounters	Channel expansion theory, marketing theory,

Media Richness Theory, Channel Expansion Theory and the importance of governance

The most frequently applied theory is Media Richness Theory (MRT) (Daft & Lengel, 1986). It originates from studies of organizations' use of information technology, where scholars use it to explain why managers in organizations use certain media. MRT is similar to medium theory (Meyrowitz, 1985), and in particular, social presence theory (Short, Williams, & Christie, 1976), in stating that media have certain fixed abilities, which impact the level of richness in the communication they afford. According to MRT, media can be classified from rich to lean based on four factors *'the medium's capacity for immediate feedback, the number of cues and channels utilized, personalization, and language variety'* (Daft & Lengel, 1986, p. 560). Thus face-to-face is the richest communication form followed by telephone conversations, and written documents, in the order from personal, to business and finally numerical. Daft & Lengel do not include e-mail, which is at the same level as other forms of written communication (depending on feedback time and how the mail is composed), or video-conferencing, which is between face-to-face and telephone conversation – as long as image and sound are synchronized (Reeves & Nass, 1996; Short et al., 1976). According to MRT, organizations face different kinds of information-related problems. These are measured on two scales concerning – *uncertainty*, where there is a lack of information, and *equivocality*, where information is present, but where there are conflicting interpretations. In the cases of uncertainty, lean media are sufficient, whereas rich media are better for handling situations where there are conflicting interpretations. In this latter case, employees may not know which questions to ask, or they need their manager to confirm their interpretation, or make a decision regarding which interpretation is the correct one. Alternative ways of regarding the interpretation of texts are presented by audience and Domestication theory in section 11.4.

CC studies have repeatedly used MRT to explain that citizens can use websites to look up information when they know what to look for (uncertainty), but turn to richer communication forms such as the face-to-face or telephone when problems arise (equivocality). However, the theory also has its shortcomings, and studies occurring at both the individual and organizational level of analysis have criticized it. Channel Expansion Theory proposes that people's experience with a medium, the communication topic, the organizational context, and the particular interlocutors influence their perception of the richness of a given channel (Carlson & Zmud, 1999, p. 155). Thus, two people who are experienced at communicating with each other using e-mail, will perceive e-mail as having a higher richness than an inexperienced pair. CC scholars have used Channel Expansion Theory as a means to criticize and expand the theoretical framework offered by MRT to include the interlocutors' experience with the media in question (Pieterse, Teerling, & Ebbers, 2008). They found that citizens' who have used a certain channel are more likely to use that channel again. They conclude that *'Channel characteristics are far from fixed, as suggested by various theories and multi-channel management models. Channel characteristics are perceptions and those perceptions determine whether citizens will choose this channel or not'* (Pieterse et al., 2008, p. 228).

Another point of criticism is that the internet offers a variety of communication channels (Hjarvard, 1997; Kay & Goldberg, 1977). These channels' richness vary considerably, some are rich (online video conferencing, instant chat) while others are lean (static websites). Moreover the organizational implementation and governance of these communication forms greatly influence their richness (Cai & Jun, 2015). In Paper #5, we argue that public authorities can increase the richness of their self-service applications, by changing the tone in written communication from a bureaucratic to a more personal style, by offering instant feedback, and by including more channels in the overall service encounter (Madsen & Kræmmergaard, n.d.). Thus information uncertainty and ambiguity can be reduced towards the point where follow-up communication is unnecessary. A complete removal of calls is unrealistic, however, people have different IT- and administrative literacy, interpret texts differently, and have different goals. Some will always need to call, just as there are complicated issues, where calling or face-to-face is the most efficient.

The literature review revealed that the theories informing multichannel management studies are much more diverse. As with the CC studies, we found that the theories were mostly imported, especially from media science, and technology adoption studies. For additional applied theories in CC see Table 7 in paper #2.

Conceptual models for channel positioning strategies

We only found a few examples of native theory in our review, and only in the shape of conceptual models. Informed by Bordewijk and van Kaam's classification of tele-information services (2002), and empirical studies, Pieterse and fellow scholars presents four models which conceptualize government organizations' channel positioning strategies (Ebbers, Pieterse, & Noordman, 2008; Pieterse & Van Dijk, 2006; Pieterse, 2010; Teerling & Pieterse, 2010). These models not only *explain* government organizations' channel strategies, but also *predict* how these strategies will develop in the future (Pieterse, 2010, p. 46):

- ***Parallel positioning.*** All channels are available, and citizens are free to choose channels.
- ***Replacement positioning.*** Based on the assumption that some channels are better than others, typically this strategy entails that e-government channels such as websites and e-mail replace traditional channels, such as letters and face-to-face.
- ***Supplemental positioning.*** Channels have certain characteristics, which make them suitable for different purposes and services. The channels supplement each other.
- ***Integrated positioning.*** This predicts the total integration of channels in a public service encounter. Governments guide citizens towards the most efficient channels, by having channels refer to each other.

Pieterse predicts, that governments will move towards the integrated channel positioning strategy, and offers several examples of how channel integration can be implemented. IT is supported by empirical studies, and the notion of 'integrated positioning' fits well with the final stages of *vertical and horizontal integration* in Layne and Lee's web-stage model (Layne & Lee, 2001).

Although there are many similarities between these strategies and the Danish Digitization strategy, they differ in one important aspect. Pieterse's strategies are based on the premise that governments should not or cannot, reduce the total volume of communication *'The aim should not be the reduction of the number of calls but shortening the calls' duration* (Pieterse, 2009, p. 251). Moreover, *'Service delivery should be based on demand, rather than the supply, of services'* (Pieterse, 2010, p. 49). The Danish Digitization strategy's primary goal is to save money on public administration by getting citizens to adopt e-government channels (The Danish Government, 2011). Studies of the development in e-government policies indicate that the managerial aspect and the focus on cost savings tend to dominate (Chadwick & May, 2003). However, it may be possible to combine the goals of saving money and providing good customer service based on user needs. In Paper #6, I present a fifth channel positioning strategy, which seeks to reduce the total volume of calls, by iteratively improving the communication surrounding an entire service encounter.

A process model for citizen multichannel behavior

Teerling and Pieterse present a process model for citizen multichannel behavior, which moves beyond the static point of channel choice studied in the variance models, and includes channel use and evaluation (Teerling & Pieterse, 2010, 2011). Moreover, Teerling and Pieterse argue that an external force, in the shape of a government organization, can influence citizens' channel choice. The model is presented in Figure 10 below, reprinted with permission of authors and publishers.

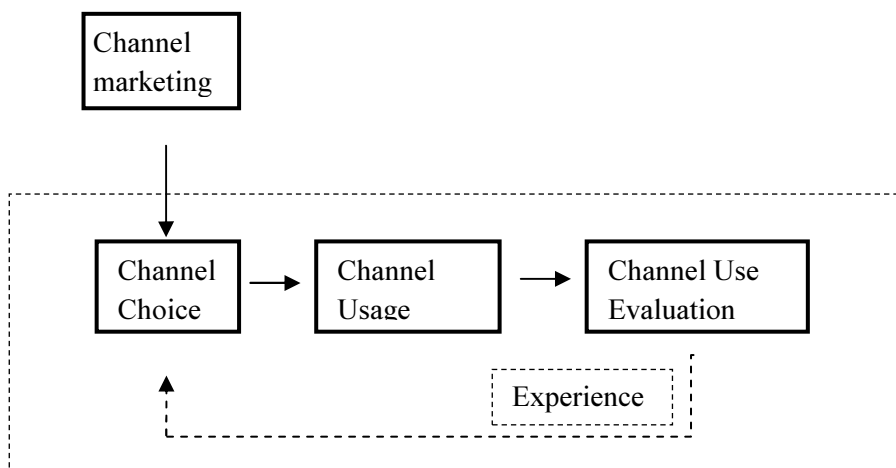


Fig. 10. Citizen multichannel behaviour (Teerling & Pieterse, 2011)

Paper #4 explains and discusses this model in detail, so I will not explain it further here. Two important factors about the model, however, are that it regards channel choice as part of a larger temporal process and acknowledges that external forces can influence an individual's channel choice. Theoretically, the model is informed by studies of media choice in organizations (Daft & Lengel, 1986; Trevino, Webster, & Stein, 2000). It also resembles the expectancy value models from the Uses and Gratifications tradition in media

science (McQuail, 1994; Palmgreen & Rayburn, 1985), but with one major exception; it does not include a persons' beliefs as a factor which influences channel choice.

In Paper #4, we expand the model, through an empirical study informed by Domestication theory and the concept of 'the warm expert' (Bakardjieva, 2005; Sørensen, 2004). Our expansions covers three elements; an individual's beliefs (in the shape of perception of public authorities), task awareness as a step, which occurs before channel choice, and the influence of co-citizens.

9.4 Domestication theory

Domestication theory is the second imported theoretical framework applied in the thesis. This section presents this theoretical framework, divided into a British and Norwegian tradition.

Domestication studies are concerned with how people, especially in and around households, make technologies their own, by integrating them into the habits and routines that form their everyday lives. Thus, it can be regarded as a framework for studying post-adoption processes. There is an emphasis on understanding, why people use technologies as they do, and seeking insight into the underlying perceptions informing this use. Thus, most Domestication studies are conducted using qualitative methods, they study the context in which technologies are used, and allow people to explain their use in their own words (Haddon, 2011, p. 313). The term 'domesticate' is taken from the taming of animals, whereby a wild beast is turned into a household animal. Helles notes, how domestication is one of man's biggest and oldest achievements, and how it is related to selective breeding, whereby certain attributes of an animal, or plant are developed to fit our needs (Helles, 2009, p. 12).

Theory, approach or tradition? The many classifications of Domestication

Interestingly, many Domestication scholars refrain from applying the term 'theory' to their use of the Domestication framework. Haddon, for instance (Haddon, 2011, p. 311), refers to Domestication as 'Analysis', 'Approach', 'Studies', 'Framework', and 'Concept, but not 'theory'.

In this thesis, I refer to Domestication as a series of studies on technology use, but also theory, a theoretical framework, and a theoretical lens. This way of regarding Domestication appears to be in line with Sørensen, who refer to Domestication as '*an approach*' and '*a theoretical scheme*' (Sørensen, 2004, p. 6).

Following Blaikie (2012), I have used Domestication literature to form my 'what questions', that is, to use it as a framework (or approach) guiding me in *how* to study single parents practices for interacting with public authorities. For instance, the aspect 'incorporation', which covers the temporal aspects and routines related to technology use, has inspired me to study the events, which cause single parents to interact with public authorities, and single parents' routines related to receiving public benefits, and their household economy.

I have also used Domestication as a theory or theoretical lens, by applying it in my analysis of the data to understand *why* single parents' interact with public authorities the way they do. Moreover, inspired by the concept of '*the moral economy of the household*' I have sought to understand the variations in single parents' practices by studying their underlying values, and perceptions of public authorities.

This application is in line with Whetten's description of theory as that which both describes and explains (Whetten, 1989). Whetten states that theory allows researchers to identify what the relevant factors are, state how they are related, and offer a logical explanation for this relationship: '*What and How describe; only Why explains. What and How provide a framework for interpreting patterns, or discrepancies, in our empirical observations. This is an important distinction because data, whether qualitative or quantitative, characterize; theory supplies the explanation for the characteristics.*' (Whetten, 1989, p. 491).

The origins of Domestication studies

Domestication studies is a collective term for a series of studies on technology consumption undertaken from the early 1990's, which grew out of television audience in the 1970's and 1980's. The anthology '*Consuming technologies. Media and information in Domestic spaces*' (Silverstone & Hirsch, 1992) contains the most fully developed framework, and is the most frequently cited Domestication publication. I have based my studies in the thesis on this framework. Before I present the two branches, I will briefly present a seminal work within audience studies, which has clearly influenced Domestication studies.

Stuart Hall and Encoding/decoding

In 'Encoding/decoding in television discourse' (Hall, 1973, 2006), Hall regards the production and reception of television content as a '*complex structure in dominance*' (Hall, 2006), and compares it to a process where meaning is first produced and distributed by a dominant institution, and then re-produced during reception by an audience. His main points are that mass media content can be regarded as a way for those in power to maintain their position and worldview, but audiences do not necessarily interpret the content the way producers intended. Hall argues that mediated content is polysemic; that is, it can be interpreted in different manners. Television shows, and indeed mass media content in general, are imprinted and embedded with a series of underlying institutional, political and ideological codes. The audience need to follow the institutional assumptions to put the audio-visual images, text, and editing together into something coherent and meaningful the way the producers intended. In addition, there are the underlying political and ideological assumptions, which inform the reception of the content. These includes knowledge and perception of how society works in general. Hall operates with three main forms codes.

If a viewer understands a television show the way the producers intended, this is said to be a 'preferred reading', and operating within the 'dominant code' (Hall, 2006). The 'negotiated code' is in line with the dominant code at the abstract level, but not at the local situational level. For instance, a viewer may accept

that a state must balance its budget, but may believe that it is important to spend more money on his children's local school. *'Decoding within the negotiated version contains a mixture of adaptive and oppositional elements: it acknowledges the legitimacy of the hegemonic decisions to make the grand significations (abstract), while at a more restricted (situated) level, it makes its own ground rules – it operates with exceptions to the rule.'* (Hall, 2006). Finally, a viewer can act within an oppositional code. Here the viewer understands and decodes the message in a complete opposite manner than the one intended, *'with some alternative framework of reference'* (Hall, 2006). If politicians argue for an invasion of a foreign country to protect their home country, the viewer may see the invasion as really being about arms sales.

Hall's notion of multiple readings of mediated content has influenced Domestication studies by claiming that people do not always interpret a phenomenon, be it a technology or a text, as given by the producers, but create their own understanding of it based on their worldviews and frames of reference.

The British Domestication tradition

In the 1980's the audience studies began to study *how* people were watching television rather than just *what* they were watching. Moreover, the studies expanded from being concerned with class differences, to also cover areas such as the depiction of gender and racial identities (Morley, 1992, p. 8). Thus there was a shift from studying *texts* to *context* through empirical analysis of audience reception and viewing practices (Berker et al., 2005, p. 5; Helles, 2009, p. 12). These aspects, the importance of identity and of everyday practices related to media consumption in the household, are key within Domestication studies.

In the late 1980's and early 1990's the first Domestication studies appear (Morley, 1992; Silverstone & Hirsch, 1992; Silverstone, Morley, Dahlberg, & Livingstone, 1989). They focus on household's use of media technologies inspired by anthropological consumption studies, which state that people assign new meanings to objects during consumption, and use the consumption process as means to display their values and identity to their surroundings (Miller, 1987). Thus, the integration of foreign objects into the household, like the wild animals before them, is regarded as both a consumption and production process. These objects are integrated through, what is termed *'the moral economy of the household'*, a concept borrowed from British historian Thomson (Thompson, 1971).

'The household is a moral economy because the economic activities of its members within the household and in the wider world of work, leisure and shopping are defined and informed by a set of cognitions, evaluations and aesthetics, which are themselves defined and informed by the histories, biographies and politics of the household and its members. These are expressed in the specific and various cosmologies and rituals that define, or fail to define, the household's integrity as a social and cultural unit.' (Silverstone & Hirsch, 1992).

The concept of the moral economy, entails that the household is involved with two simultaneous processes. First is the economic exchange of goods and services with the surroundings. Secondly, a process whereby the meaning ascribed to these goods and services, is continuously negotiated both between household members and between the household and society:

'To understand the household as a moral economy, therefore, is to understand the household as part of a transactional system, dynamically involved in the public world of the production and exchange of commodities and meaning.' (Silverstone & Hirsch, 1992).

It is possible learn about a household's values, resources, and histories by studying how they display, talk about, and use consumer goods and service. The consumption process can be studied through four aspects (Haddon, 2011; Silverstone & Hirsch, 1992). In Paper #4, they are presented as:

- *Appropriation* covers the processes of negotiation and consideration whereby the technology is brought into the household and changes from being a generic commodity to an object of significance with a certain purpose for the household members (Haddon, 2011).
- *Objectification* covers the physical display of the technology; its placement and the status ascribed to it as an object in the household. Through this display, the household members reveal their values to others.
- *Incorporation* concerns how the technology fits into the habits and routines of everyday life. This aspect is especially important in the analysis of mediated content, which does not have a spatial extension, although it is accessed through physical media in the household.
- *Conversion* concerns how the household members share their use of technology with others, and make claims for status related to this use.

Thus, Domestication theory offers both a means to understand, why people use technology the way they do, and suggests how technology use can be studied; by analyzing the spatial and temporal aspects of the use, and the statements that are made in relations to the technology. In Paper #4, I apply the theory through a series of questions relating to each of these aspects. Following the advice of Domestication Scholar Margrethe Aune at NTNU, I also used these questions to structure the paper.

The Norwegian Domestication Tradition

Sørensen presents two main sources as inspiration for the Norwegian Domestication tradition (2004). The first is actor-network theory (ANT), and the perception of 'technological artifacts as embodiments of designers' ideas about the ways users were supposed to apply their design' (Sørensen, 2004, p. 5). From ANT comes the notion that designers inscribe the way technical objects are supposed to be used into them. This notion of technologically as containing 'scripts' (Akrich & Latour, 1992, p. 208), which can be overridden by the users, and the conflict between designers 'programming' and users 'antiprograms'

resonate clearly with Hall's notion of audiences 'preferred readings' (2006). However, Hall's studies are clearly positioned within Critical Theory and emphasize the struggle between the dominant and lower classes, whereas ANT describes the design of technology as taking place within 'relevant social groups', which exist at roughly the same societal level, thus is not concerned with class struggle (Bakardjieva, 2005). The second source is the British Domestication tradition, particularly (Silverstone & Hirsch, 1992).

The Norwegian Domestication tradition differs from the British in several aspects. Due to its inspiration from Science and Technology studies, it has a stronger emphasis on design and the development of technology. Some Norwegian studies examine the development of public policy and public norms (Lie & Sørensen, 1996; Sørensen, 2004). This leads directly to the second aspect; the Norwegian studies do not only occur at the individual or household level, but also at the national level. The studies also, to a higher extent than the British, analyze technologies, which are not physical media, such as the car, buildings, and public websites (Berker, 2011; Lie & Sørensen, 1996; Liste & Sørensen, 2015). Gender is studied more frequently than class in the Norwegian tradition. This could be because Norway has a higher level of economic equality than the UK (OECD, 2011). If we consider the context in which the two Domestication traditions originate from Norway in the mid 1990's and 2000's it is very different from the UK in the late 1980's. According to Sørensen (2004), the Norwegian tradition also studies resistance, non-use and sanctions related to non-use. While the British tradition for studying variation in use comes from critical theory and its emphasis is on the class struggle, Sørensen refers to design studies and Donald Norman as an influence (Sørensen, 2004). Such design studies are strongly influenced by the intersection between cognitive psychology and biology, especially by the works of cognitive psychologist James Jerome Gibson, on how animals (including human beings) perceive their environment based on their physiology (Gibson, 1986).

The application of Domestication theory in the thesis

The application of Domestication theory in the thesis has not been without problems. The framework was originally developed to study the consumption of media technologies, physical objects, purchased and displayed in a household, which often included two adults. I will not claim that it has been a perfect fit. I have especially struggled with the 'objectification' aspect, since the studies revolve around digital technologies and self-service as a process. I also struggled with the analysis of how my participants assigned symbolic value to the e-government channels, and definitely focused more on participants' usage practices.

However, the framework has been constantly evolving since its inception, and my appropriation of it is hopefully in the spirit of one of its leading forces Roger Silverstone who writes: '*All concepts, once having gained the light of day, take on a life of their own. Domestication is no exception.*' (Berker et al., 2005, p. 229). Looking back, Domestication theory has been inspirational in terms of:

- Providing a framework for studying **post-adoption processes**, and guiding me towards specific aspects of single parent's interaction with public authorities.
- Studying the **overall context** in which this interaction occurs, the entire mediated environment, rather than a single channel in isolation.
- Acknowledging that people have **existing routines and habits**, which may pose a much stronger influence on them than the new e-government channels.
- Studying the interaction from the **citizens' point-of-view**. This forced me to move beyond the government controlled channels towards third party channels such as web-banking and search engines. It also made me very aware of the how the silo-structures of public authorities were recreated online, and experienced by a newly single parent.
- Studying the **social interaction** which influences channel choice, including how people help each other, inspired by Bakardjieva's notion of 'the warm expert'.
- Studying **alternative uses and resistance** to the mandatory e-government strategy, without reducing this to a simple binary concept of 'use or non-use'. Domestication theory provides numerous examples, as well as an explanation to why people do not always do as they are told.
- Through the concept of 'the moral economy of the household' encouraging me to include people's **values** in the analysis, and offer a theoretical explanation to their practices.

This section has presented the thesis' theoretical framework, which I have used to guide the analysis of the data from the empirical studies. The next section briefly presents the five papers in the thesis, and their main results.

10. Presentation of papers

This thesis addresses the problem that although many single parents have adopted e-government channels, many supplement with traditional channels for interacting with public authorities. The purpose of the thesis is to explain why this is, and offer suggestions for how policymakers can change the situation. This is formulated in the main research question:

How can public authorities increase citizens' use of e-government channels, and simultaneously reduce the use of traditional channels?

In the previous sections, I have outlined my research strategy, the research and problem solving cycle, methodological considerations, the empirical studies, and finally the theoretical lenses I have used to analyze the data. The empirical studies and the analysis of the data have resulted in multiple findings which contribute to research and to practitioners. In the following, I briefly present five papers I have written to address the research question. However, additional papers could also be written based on the empirical data. At the end of this section, I present an outline for five such papers following Mathiassen et al. (2012).

10.1 Paper #1. The development in leading e-government articles 2001-2010

This paper can be regarded as a critique of the e-government field. We repeat and extend a previous study (Heeks & Bailur, 2007) by analyzing the development in the fifty most cited e-government papers from 2001 – 2010. We describe the development and offer suggestions for further studies. The study was a massive undertaking, covering 23 indicators (many of which were qualitative) in 50 papers. It was a painstaking process, taking close to 18 months, and offered few direct knowledge contributions to the thesis. Nevertheless, the paper served three purposes.

First, it was a way for me to enter the e-government field, and get an overview of the most influential papers. Identifying and reading these papers provided an answer to questions such as; What are the main **themes** studied, which **methods** are applied, what are the **objects of analysis**, what do the **results** show and what kind of **recommendations** are offered? The paper does not present all of this information, but I acquired a lot of knowledge from repeatedly reading and discussing the papers. Reading *People and Chips* (Rowe & Thompson, 1996), as a background for the analysis of the impact and impact causes of e-government, was inspirational for different perspectives on technology's impact.

The second purpose was to gain an insight into writing practices in e-government. Heeks and Bailur's paper is quite critical, but in its criticism, it outlines what constitutes good and bad practice. Thus, the reading and analysis served as a way of learning how to write papers within the e-government field.

Third, the paper presents a series of methodological and conceptual gaps, which my studies and future papers could cover. This last aspect is problematic, as we only study a small sample of the e-government field. This

was brought up in the peer-review of the paper, as well as at my co-author, Jesper Berger's PhD defense. I could argue, that our sample is a population in itself (the most cited papers), but I agree with the criticism.

Here are the main issues and gaps presented in paper #1, and how they influenced the thesis:

- **A balanced socio-technical view on e-government.** We found that many of the papers were technologically deterministic and optimistic about e-government. Rather than merely attributing the use of e-government channels to fixed technical properties or predetermined conceptions, I have sought to analyze the interplay between the technical and the social. Moreover, I have looked for both positive and negative aspects of e-government from citizens' point-of-view, as well as looking for reasons for the variations in their perceptions of e-government and public authorities.
- Studies based on an **interpretivist research paradigm** and informed by specific theories. We labeled most of the studies as positivist, and found few examples of direct references to theory. Thus, my thesis contributes by offering an alternative research perspective on e-government and by being informed two theoretical frameworks: Medium Richness Theory, and especially Domestication theory.
- **Primary data and longitudinal studies.** We found that only five papers reported on studies where researchers had left their offices, and we found no longitudinal studies by the demand side. I have conducted several empirical studies, which have generated primary data. Moreover, I have conducted longitudinal studies, partly in the shape of follow-up studies, but especially by tracking the development in channel traffic over time.
- **Actual use.** Most of the papers we analyzed described the intention to use, or hypothetically use e-government, often for a generic service, or simple service. University students are often used as respondents. I study the actual use of a complicated service, from the real users' point-of-view. This has provided a deeper understanding of their practices, and generated data on themes, which matter to users.
- **The use of specific e-government services in context.** Rather than regarding e-government as an overall phenomenon, which is the same everywhere and to all people, I have studied the digitization of one type of services; public benefits for single parents in Denmark in 2013-2014. Moreover, my studies take place in a mandatory setting, which also adds to their novelty. This limits the generalizability of the findings, but it adds a richness and depth, which is missing in many other studies.
- **Description of methods.** In spite of restrictions on paper lengths, I have strived to describe the methods applied in each paper properly.
- **Specific recommendations.** Ironically, although e-government has a strong practitioners involvement, we found few papers offering specific recommendations of what to do, and some of the recommendations seemed tacked on and had no connection to the findings. I have offered specific recommendations, grounded in my findings, and tracked these recommendations (Paper#5).

10.2 Paper #2. Channel Choice: A Literature Review

This paper presents an in-depth analysis of the channel choice branch of e-government. Unlike paper #1, it covers the entire population; all peer-reviewed English language papers on channel choice in relation to government-to-citizen interaction from 2005 and 2014. It also includes a brief synthesis of findings.

This second literature review was the first task, which my new supervisor, Professor Pernille Kræmmergaard, set out for me. It represents a shift in how I approached the overall research problem. The paper's purpose is to position the thesis specifically in relation to the channel choice branch. Finally, the experience from the first review had clearly affected me. I wanted and needed to write fast, and produce a sharp review, with few but important indicators, which were directly relatable to my research question.

I conducted the study following specific procedures by combining methods for finding and analyzing papers (Hofmann, Räckers, & Becker, 2012; Webster & Watson, 2002), with a framework my supervisor had developed for classifying such papers (Schlichter & Kraemmergaard, 2010). Asking the experts in the field for keywords and for hard to reach papers also served as a way to get to know them, and for them to offer additional suggestions for the study. I remain in contact with several of these experts, and can strongly recommend others to follow this method. As of writing, I am collaborating with Sara Hofmann on an extended edition of this review, which will contain a more detailed discussion of results, practitioners recommendations, suggestions for future studies, and may also cover the government-to-business context (Boer, 2014). The outcome of the review covers several areas:

- **The actual papers.** The list of the 36 papers is in itself valuable to channel choice scholars.
- **Background information.** Knowledge of the most productive authors, the major outlets and the countries where the studies were conducted is valuable in terms of being introduced to the field, knowing where to publish, finding and suggesting reviewers, and discussing the generalizability of findings.
- **The classification of methods.** The classification of the papers yielded several methodological and knowledge gaps, which I have used to position my papers and argue for their contribution. For instance, few studies on citizen channel choice rely only qualitative methods, there are no direct observations of the interaction between citizens and government, and no studies of channel choice at the group level.
- **Concepts studied and theoretical frameworks.** Divided in two main areas, individual channel choice, and organizations' multichannel management, this provides a quick overview of concepts, imported theories, and a guide to which papers covers the specific areas.
- **A brief discussion of findings.** This is short due to paper length restrictions and the time I had for writing the review. I also briefly present two of the models, which my later papers have extended upon; Teerling and Pieterse's process model (2011), and Pieterse's Channel Positioning strategies (2010).
- **Suggestions for future research.** This serves to highlight the gaps, which my future papers address. Table 7 below includes the papers, which cover these gaps.

Table 7. Gaps presented in the CC literature review

Suggestion	Purpose	Covered in
Studies from new countries and services	Increase analytical generalizability	Paper #3, #4, #5
More use of primary data and qualitative data	Improve statistical analysis of CC, and in-depth examination of specific areas	Paper #3, #4, #5
Direct observation and analysis of channel traffic	Supplement and update existing studies	Paper #3, #4, #5
Longitudinal studies	Analyze long-term effects of MCM instruments	Paper #5
Studies of CC at group level	Extend existing process models to include the effects of citizen-to-citizen interaction on CC	Paper #4
Field experiments	Bridge gaps between CC at individual level and MCM at organizational level	Paper #5

- **The data.** Not presented in the review, this includes the actual papers, an Excel spreadsheet with coding values and one-page descriptions of each paper. I also coded areas not in the paper, such as additional findings, recommendations for practitioners, and suggestions for future studies (from the authors).

Having easy and structured access to this data was valuable when writing the three core research papers.

Having presented the literature reviews, and the main gaps, the next section present the three research papers contribute to covering these gaps. First, however, I briefly return to the research questions.

Research questions in the papers

The research questions in the papers are different from those presented in this thesis. I found Blaikie's classification (What, Why and How) difficult to retain when writing papers. The papers are written as suspense stories (inspired by Pernille Kræmmergaard and Knut Sørensen), keeping surprises for the reader. I found it problematic to ask 'Why' questions up front, as it ruins the surprises, and presupposes that certain findings have been made. Also, although Domestication theory has been a major influence on this project, I do not refer to in the research questions. This also has to do with the paper structure; Domestication theory is introduced in the theoretical background section, as the lens through which the research questions are examined, not an area which I explicitly seek to contribute to. The questions are presented in Table 8.

Table 8. Research questions asked in the papers

Paper and RQ	Aspect	Sub-questions
<p>#3: The efficiency of freedom.</p> <p><i>How do citizens actually use mandatory e-government channels?</i></p> <p><i>How can studies of citizens' actual use contribute to improving e-government channels and reduce the need for traditional channels?</i></p>	Appropriation	<ul style="list-style-type: none"> • <i>How are e-government channels introduced into households?</i> • <i>What are the reactions to mandatory e-government?</i> • <i>How do single parents' make e-government channels their own?</i>
	Objectification and incorporation	<ul style="list-style-type: none"> • <i>Where does the interaction with UDK occur?</i> • <i>When does the interaction with UDK occur?</i> • <i>Which channels do single parents use for interaction with UDK?</i> • <i>How and why does channel interplay occur?</i> • <i>How are e-government channels incorporated into routines?</i>
	Conversion	<ul style="list-style-type: none"> • <i>How do single parents share their Domestication of e-government channels?</i>
<p>#4: Warm Experts</p> <p><i>How does citizen-to-citizen interaction influence channel choice, use and evaluation for government-to-citizen interaction?</i></p>	Channel choice	<ul style="list-style-type: none"> • <i>What are the main problems encountered by single parents in relation to public benefits, and what channels are used to solve them?</i>
	Channel use	<ul style="list-style-type: none"> • <i>How do single parents get help to interact with public authorities?</i>
	Channel evaluation	<ul style="list-style-type: none"> • <i>How do single parents share their evaluations of public service encounters?</i>
<p>#5: How to succeed with MCM</p> <p><i>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?</i></p>	Problems which cause telephone calls and suggestions for improvement	<ul style="list-style-type: none"> • <i>What do single parents telephone UDK about in relations to the single parents' declaration?</i> • <i>What suggestions do the single parents offer for improving the declaration?</i> • <i>How can a public authority deal with these problems and implement improvements?</i>

10.3 Paper #3. The Efficiency of Freedom

This paper presents an analysis of single parents' actual use of e-government channels by applying Domestication theory as a lens following the four aspects of the Domestication process. It starts by answering 'What' questions, by describing single parents' practices for interacting with public authorities, their reactions to mandatory e-government channels, and their use of other technologies, including their use of traditional and third party channels. One important finding is how participants gain awareness of incoming payments not from borger.dk, but rather through web banking, which has been domesticated to a far greater degree than any e-government channel. A related finding, which came from studying the use context, is that channel use is not only sequential, but can also be simultaneous.

Then the paper examines why these practices occur, by seeking an understanding from the participants' point-of-view, informed by the concept of 'the moral economy of the household', and by studying existing routines. I argue that single parents are not just guided by the perceived efficiency of the respective channels, but also by their underlying perceptions of public authorities. Some believe that public authorities and the regulations regarding public benefits are subjective, and open for negotiation, or that the authorities deliberately keep information from them. Negotiation needs a human partner. Thus, interaction through rich traditional channels is preferred, as this permits the transmission and reception of non-verbal cues.

The last part of the paper consists of multiple practical recommendations for how the use of traditional channels can be reduced. These recommendations come directly from the study of actual use. Knut Sørensen suggested that I drew a circle, to demonstrate how citizens' alternate ways of using the channels could inspire the authorities to improve their services. This is what the title 'The efficiency of freedom' (also Knut's suggestion) refers to. The paper offers multiple contributions to the channel choice field:

- **The context is new.** We study actual use in a mandatory post-adoption setting.
- **The methods.** As suggested by previous channel choice and e-government scholars, we employ qualitative methods, and study actual use practices, in the call center through co-listening, focus group discussions, and through observation and interviews in participants' own homes.
- **Theory and research philosophy.** The study is informed by a theoretical framework from the interpretivist/social constructionist paradigm. This approach inspires us to study variations in use and seek understanding into why this use occurs from the participants' point-of-view.
- **Finding.** Multiple new findings are presented; simultaneous channel use, use of third party channels, the importance of citizens' values and perception of authorities, causes of traditional channels use, non-ICT related skills, and citizen-to-citizen's influence on channel choice.
- **The recommendations.** We offer specific recommendations on 'what to do' and 'how to do' based on observation of actual use, and statements from real users.

10.4 Paper #4. Warm Experts in the Age of Mandatory e-government

This paper extends paper #3, by focusing on how single parents' share and shape their practices for interacting with UDK and other public authorities. It uses Domestication theory as the theoretical lens, but applies Bakardjieva's concept of 'the warm expert' rather than the four aspects of the Domestication process. It analyses the skills single parents need to use self-service channels, and argues that while most have sufficient digital literacy, many lack administrative literacy. The paper aims for empirical and theoretical contributions, rather than recommendations to practitioners. Following Blaikie's division of research question, the paper answers 'what' and 'why' research questions, but not 'how' things could be different.

The paper's main contribution is to the channel choice literature, by extending an existing process model by Teerling and Pieterse (2011), which divides the public service encounter into three steps; channel choice, channel use, and channel evaluation. Teerling and Pieterse demonstrate that a government organization can influence channel choice through marketing. Our extension of the model covers three areas:

- **The awareness step.** To the single parents, choosing a channel for interaction is not the first step in an encounter. First, they need to gain awareness of what the problem is, and what they are required to do. Identifying the responsible authorities and their websites in particular, can be a time-consuming task.
- **Co-citizens as external influence.** We find that single parents' friends and relatives often influence the public service encounter. They offer knowledge of the task and the services in question, experiences in dealing with public authorities, means of identification, and emotional support.
- **The importance of values and beliefs.** Teerling and Pieterse's model includes a person's previous experience with a public service encounter as a factor influencing channel choice, but it does not include the importance of personal beliefs or values. Influenced by Domestication theory and the concept of 'the moral economy of the household', we argue that personal and socially shared values and beliefs also influence the public service encounter, in relation to which channels to use, how to use them, and why it is important to act in this manner.

Another contribution of the paper is that the citizen-to-citizen interaction does not necessarily lead to increased use of the e-government channels, nor that the use follows the scripts that the authorities intended. Although most of the studied practices shared do follow the mandatory requirement, some participants actively seek to get around these requirements, just as some seek to negotiate the laws concerning public benefits. In an early draft of the paper (moved to the practitioners recommendations section of this thesis), I argue that public authorities should be careful in facilitating citizen-to-citizen interaction through social networking sites. Without heavy moderation, they risk that citizens use these sites to share illegal practices and loopholes. Instead, I argue that public authorities should publish questions and answers from citizens in regards to the particular services. This requires active moderation by the authorities and filtering of citizens' questions. It also prevents citizens from directly interacting with each other on public authorities' websites.

10.5 Paper #5. How to succeed with multichannel management

I wrote Paper #5 with a strong practitioner contribution in mind. It is the clearest example of applied science in the thesis, and the only paper, which includes a direct intervention by an organization.

The paper is written as a case study, following Yin (2014), which presents the Danish mandatory e-government strategy to an international audience. It shows the inter- and cross-organizational collaboration undertaken to improve the communication surrounding the 2014 single parent's declaration. I had not intended to write this paper, having not even heard of the declaration until I conducted the pilot studies in UDK's call center in the spring of 2013.

The paper presents the collaboration surrounding the declaration divided into three stages; problems related to the 2013 declaration, the efforts made to improve the declaration, and finally the outcome and channel traffic for the 2014 declaration. This is followed by a discussion, wherein I also, albeit briefly, present an outline for a pre-emptive channel positioning strategy, which seeks to stop citizen-initiated requests before they are made. This strategy extends Pieterse's channel positioning strategies, and will be fully developed in paper #6, which also present more in-depth contributions to Medium Richness Theory.

Returning to Blaikie's research questions (Blaikie, 2012), this paper starts by asking 'what' questions by describing a series of problems related to the 2013 declaration, which caused citizens to call. Then it covers 'how' question by presenting improvements which were made to reduce these calls. An anonymous reviewer suggested that I split the improvements into two groups – one covering the channel specific additions (increase in mass communication) the other covering the qualitative improvements (making the language easier to understand). This second category could be labeled as 'usability of content' and is related to how to write in a clear and easily comprehensible fashion. As such it is mostly non-channel specific.

Finally, the paper moves on to the 'why' question and applies Medium Richness Theory to explain why the suggested improvements work by reducing information uncertainty and ambiguity. However, Medium Richness Theory only explains the relationship between information problems and media choice. In this paper we sought to go one step further, and argue for an ideal situation, where the communication is absolutely unambiguous and removes all uncertainty, thereby reducing the need for further communication altogether. Obviously, this is an ideal, one can make numerous objections against it, the audience research tradition will state that people perceive content differently. Nevertheless, I find the point of seeking to solve the problem beforehand through clear communication and user studies worth studying further.

The paper contributes to channel choice studies by presenting a detailed case study of inter- and cross-organizational collaboration in a mandatory setting. It also includes a longitudinal before and after study, and contains observations and analysis of actual use and channel traffic, and statements from citizens.

10.6 Additional research papers

The empirical studies conducted for the thesis have resulted in large amounts of both quantitative and qualitative data. I chose to position the thesis and its research contributions towards channel choice studies in e-government, and use Domestication theory as an imported theoretical framework (F₁). When writing papers, I wrote outlines for additional papers labeled #2b, #2c, etc. where I placed topics and segments, which did not fit in. This was a great aid in keeping the papers focused and within the word limit. Some of these are presented below, following Mathiassen et al.'s compositional style (Mathiassen et al., 2009, 2012).

Note that these papers are not yet written, except for a draft of paper #6.

Paper #6. Towards a pre-emptive channel positioning strategy

Paper type: Conceptual area-of-concern investigation. **Main contribution:** F_A.

In a series of papers, Pieterse and fellow Dutch scholars classify and explain the development in multichannel management through four channel positioning strategies (Ebbers et al., 2008; Pieterse & Van Dijk, 2006; Pieterse, 2010; Teerling & Pieterse, 2009). These are informed by Medium Richness Theory and Bordewijk and van Kaam's classification of tele-information services (Bordewijk & van Kaam, 2002; Daft & Lengel, 1986). The newer strategies seek to lead citizens towards the most efficient channels. This strategy fits well with the Danish e-government strategy, which aims to increase the *share* of C2G interaction via e-government channels to 80 percent, but ignores the total *volume* of traffic.

This paper expands a model briefly presented in paper #5, and presents a fifth pre-emptive channel positioning strategy. This strategy seeks to reduce the total volume of citizen-initiated requests to public authorities by dealing with the underlying issues before they cause requests. This is achieved iteratively by continuously updating the entire service encounter informed by user studies and by following the Scandinavian 'write clearly' tradition (Jensen, 1998; Kjærgaard, 2012; Lund, 2004).

Theory and positioning: Media Richness Theory, Usability studies

Outlet: Scandinavian Workshop on E-government 2016 (submitted as research in progress), Government Information Quarterly, Information Polity, IJEGR

Paper #7. Domestication theory: A Literature Review**Paper type:** Framework Investigation, Literature review**Main contribution:** F_I, critique

To the best of my knowledge, no literature review exists on Domestication studies. This paper presents a structured review following Webster & Watson (2002) and Schlichter & Kræmmergaard (2010). The literature review also covers book chapters, as these are an important outlet for Domestication studies.

Outlet: New Media and Society, The Information Society, book chapter**Paper #8. Expanding Domestication theory to encompass mandatory digital technologies****Paper type:** Framework Investigation**Main contribution:** F_I, development

The purpose of this paper is to offer contributions to Domestication theory based on experiences from the research project. Due to the positioning of the thesis and the selected outlets for publication, the papers have primarily contributed to channel choice studies in e-government and to practitioners.

Domestication theory was developed to study physical object, especially ICT's (Haddon, 2007; Silverstone & Hirsch, 1992). The framework reflects this, especially with regards to the aspect of 'objectification', whereby households display technologies in claims for status. How is the Domestication process affected when the domesticated object changes from being physical and voluntarily purchased to being digital and mandatory? Moreover, how can scholars conduct studies of non-tangible objects and services?

Another contribution comes from shifting the area of analysis from the individual or household level to the national level, and from regarding self-service as a concept rather than online applications. In this perspective, the e-government strategy is not just about the diffusion of objects, but rather about the diffusion of ideas, changing the public perception of what a citizen can expect from the welfare state, and vice versa. Here, the state uses the mandatory e-government strategy to domesticate its citizens. Such a perspective is more in line with Norwegian Domestication studies (Brosveet & Sørensen, 2000; Liste & Sørensen, 2015; Sørensen, 2004). How does such a change in perspective affect the Domestication framework?

Theory and positioning: Domestication theory (Norwegian)**Outlet:** New Media and Society, The Information Society

Paper #9. How to collect and analyze multichannel traffic in a cross-organizational setting

Paper type: Research methodology and area-of-concern investigation

Main contribution: Methodological, empirical

The CC literature review in this thesis (paper #2) revealed that only a few CC studies contain data on channel traffic. With the exception of paper #5, the data presented is a decade old and from non-mandatory settings.

The paper first discusses the benefits of collecting multichannel traffic for multichannel management, but also the problems involved in collecting and validating this data in cross-organizational settings. Then the paper presents a longitudinal quantitative study of multichannel traffic to a public authority following the implementation of the mandatory Danish e-government strategy. The study presented is informed by the Uses and Gratifications tradition of media science, especially the concept of ‘functional alternatives’, which state that media can replace each other if they are regarded as serving the same function (Flanagin & Metzger, 2001; Rubin & McHugh, 1987). Similarly, according to Medium Richness Theory it should be possible to replace one channel with another, as long as the richness of the channels are similar.

Theory and positioning: CC literature, Uses and Gratifications literature, Medium Richness Theory

Outlet: E-government journals (GIQ, IJEGR, Information Polity)

Paper #10 Using official statistics in e-government and channel choice studies

Paper type: Research methodology investigation

Main contribution: Methodological

This paper discusses the benefits and drawbacks of using official statistics to inform e-government studies. Eurostat’s 2013 Household survey, which contains a special module on e-government, is used as an example.

The literary reviews of the e-government field (paper#1) and CC studies (paper#2) revealed that few studies use official statistics. Those that do often use old data. Eurostat’s annual ICT Household and Enterprise surveys provide an extensive overview of the historical and international (European) development within ICT adoption and use. The paper discusses the benefits (cheap, reliable, valid, time-series, international comparisons, access to methods) and drawbacks (technologically deterministic and optimistic framework, mainly managerial) of using this data. Then the paper presents an analysis of citizens’ use of non-e-government channels, which I did not use in the thesis, possibly in a times series by repeating questions in 2016.

Theory and positioning: CC and e-government literature, Mixed method literature

Outlet: Conference proceedings (EGOV, SWEG, ICIS)

11. Conclusion

This concluding section consists of four sub-sections covering:

- main findings
- quality criteria and limitations
- results from the research cycle and contributions to channel choice studies in e-government
- results from the problem solving cycle and contributions to practitioners

Overall, this thesis contributes to the channel choice studies in e-government through an in-depth mixed method study of citizens' multichannel interaction with UDK, and the underlying assumptions informing this interaction in a post-adoption and mandatory setting. The thesis presents a series of practical recommendations to public authorities, for how to improve multi-channel and cross-organizational administration of public benefits in such settings. These include making the communications easier to understand and making the self-service applications fit into citizens' habits. Finally, the thesis presents a pre-emptive channel positioning strategy, discusses how public authorities can implement such a strategy, and presents the effects this strategy on adoption rates and channel traffic through a longitudinal case study.

11.1 Findings

Returning to the research questions, this thesis initially asked the practically oriented research question:

- *How can public authorities increase citizens' use of e-government channels, and simultaneously reduce the use of traditional channels?*

Two additional questions were asked to document single parent's practices for interacting with public authorities, and gain an understanding of their actions from their point-of-view:

- *What are single parent's practices for interacting with Udbetaling Danmark regarding public benefits?*
- *Why do single parents interact with UDK in this manner?*

To answer these questions, I have conducted two literature reviews, which are presented in paper #1 and #2 and a sequential mixed method study, the findings of which are presented in papers #3 and #4. The literature reviews provided an overview of the e-government field and its channel choice branch, and identified knowledge and methodological gaps therein. The mixed method study started by identifying events, which generated calls through an analysis of call-statistics. Through observation and conversations with caseworkers, I have gained insight into typical events, which generate calls and the topics calls revolve around. Then I conducted focus group discussions to enquire further into why citizens were calling, what their perceptions and practices for using e-government self-service applications were, and how they shared these perceptions and practices. I proceeded to analyze this data using Domestication theory as a theoretical lens. After initial findings were made, I conducted follow-up interviews in the homes of selected

participants. These follow-up interviews generated additional insight into their practices, and offered a means to validate initial findings. Based on the findings, I recommended a series of changes to the communications surrounding a self-service application. Finally, I collected and compared channel traffic data from before and after the changes were implemented to document their effects, as reported in paper #5.

This section answers the thesis' research questions. I start with the descriptive 'what' question, followed by the explaining 'why' question, before offering recommendations for 'how' things can be different.

What are single parent's practices for interacting with UDK regarding public benefits?

There is lot of variation in how the participants interact with UDK. Most participants have been single parents for a long time. They have infrequent dealings with UDK, mostly concerning the annual single parents' declaration or if something happens in their children's lives. Some stick by the traditional channels, some use a mixture of channels, and some only use the e-government channels. Most of the participants, however, use the e-government channels, especially *borger.dk*, but turn to traditional channels, either by showing up at the local community center, or by calling UDK or others when problems occur. I found considerable variation in what constitutes a problem, and the level of patience shown before participants call. Some have a great deal of difficulty understanding the rules regarding their benefits, and the language used by public authorities, while others have no or few problems. The setting in which the interaction occurs also vary. Some prefer to solve these tasks in the evening, in a quiet environment, others do it right away. Some call during lunch at work, while others would never do that in front of colleagues or employees.

Participants' existing media and financial routines influence their interaction with UDK. Broadly speaking, third party channels are much more important, and far more frequently used than e-government channels. Often single parents receive information concerning the benefits on these channels, for instance through web-banking statements, or by using Google to search for answers, either from the authorities, authority figures (lawyers and counselors) or other single parents. Some participants have integrated their digital post with their mobile phones (through text messages) or regular e-mail accounts, and some utilize a shortcut from their web-banking accounts to e-Boks (to read digital post). In this way, they have tied their interaction with public authorities to existing digital and financial routines.

These findings present several contributions to the channel choice literature. First, contrary to previous studies, and certain contemporary studies (Lamberti, Benedetti, & Chen, 2014; Reddick, Abdelsalam, & Elkadi, 2012), the e-government channel is the primary channel in the setting I have studied. While Danish single parents' have high ICT skills, traffic data shows similar patterns for housing benefits, where many recipients are pensioners. I assume that this applies to other service areas in Denmark as well, but I cannot back that claim up with my data.

Second, channels are not just used sequentially, but also simultaneously. Many problems occur, or revolve around an online interaction. This causes single parents to call for help, while they are in front of their computers. This is important, because it shows that problems do not always exist prior to a public service encounter, sometimes they are caused by it. Thus, there is a connection between the multichannel interaction. This suggests that improving the service on the e-government channel will lead to less traffic on traditional channels. Such a finding shows the benefits of conductive qualitative studies and observing actual use. Many quantitative channel choice studies involve pre-conceived problems where the respondents can only choose one channel at a time. Such studies fail to capture the complexity and choices citizens face during actual use.

Third, I have found that citizens also influence each other, and share their views on public authorities, and practices for interacting with them. In paper #4, I expand Teerling and Pieterse's process model to include citizen-to-citizen interaction as an influencing force on channel choice and use. Some of these shared practices deviate from the official rules/scripts, which brings us to the last finding.

The mandatory setting of the study, and the application of Domestication theory, has made me aware of the multiple types of Domestication, which take place in relations to citizens' interaction with UDK. Several literature reviews, including mine, show that quantitative channel choice and e-government adoption studies in general, assume that citizens use the channels the way they are supposed to, and follow the official script (Hofmann et al., 2012; Madsen et al., 2014; Madsen & Kræmmergaard, 2015; van de Wijngaert, Bouwman, & Contractor, 2012). Adoption equals use. This is also the case for many of my participants. But, I have also observed various forms of alternate use, which occur surrounding certain participants' interaction with UDK, whereby they make the law and e-government channels their own.

Paper #3 and #4 present examples of how Domesticate the e-government channels. For instance, one participant created her own receipt by grabbing screenshots from the self-service application, thereby fitting her use of the system to her own needs. Future versions of the self-service e-government channels aim to address this need by providing receipts, which can be printed and saved. Some citizens seek to influence the likelihood that they will be granted certain benefits by negotiating with caseworkers or learn more about benefit eligibility by paying attention to non-verbal information. This influences their channel choice, as it requires face-to-face or telephone interaction with a human partner. Finally, some participants oppose the mandatory requirement, and attempt to negotiate with caseworkers to get them to solve the task for them. They have developed schemes for not using e-government channels, such as 'acting stupid' or lying and saying that their computer has broken down. To sum up, the Domestication, interpretation and adaptation I have studied not only concerns the use of e-government channels, but also the legal system concerning public benefits, and the mandatory e-government strategy. My participants seek to make everything their own, be it physical or digital technologies, laws or public policies.

Why do single parents interact with UDK in this manner?

There are several possible theoretical explanations to the practices outlined above. According to Medium Richness Theory, people can acquire simple information through text, but turn towards direct means of interaction for more complicated problems. This study contains multiple examples of this. However, what constitutes a problem varies considerably depending on the citizen in question. Most previous channel choice studies have only regarded one set of skills, namely digital literacy. Inspired by other e-government scholars (Bertot & Jaeger, 2008; Grönlund, Hatakka, & Ask, 2007; Skaarup, 2011), I find that the lack of administrative literacy is another problem which causes some to turn towards traditional channels. Participants' lack of knowledge of benefit eligibility, the distribution of benefit administration among multiple authorities, and the silo structure of UDK complicates matters further. This causes them to call for help, to get an overview of all the benefits they are eligible for, which extends beyond family benefits.

Inspired by (Bakardjieva, 2005), I study how citizens help each other. As presented in paper #4, these 'warm experts' offer several types of help. They provide insight into benefit eligibility from the point-of-view of a citizen, rather than a public authority. They provide emotional support. They also present their knowledge in a manner, which make sense to the person helped. This demonstrates the importance of identification, and communicating plainly and from the single parent's point-of-view once more.

Finally, the concept of the moral economy of the household has been inspirational in terms of understanding why some single parents interact with UDK the way they do (Silverstone & Hirsch, 1992). I argue that some single parents perceive UDK and the laws regarding family benefits as subjective, and believe that it is possible to negotiate about the likelihood of being granted benefits. Some participants believe that UDK and other public authorities are not informing them of all the benefits they are eligible for. This causes them to interact through traditional channels. In another example, a single parent in a leading position said that she did not want to be seen interacting with UDK at work, and therefore refrained from calling. Finally, two participants stated that the public benefits should not be a 'smorgasbord'. Their political views influenced how they wanted the self-service applications to be designed. Thus, these examples show that people's values can also inform their channel choice, how they perceive the task in a public service encounter, and how they prefer to have the information presented to themselves and others.

How can public authorities increase citizens' use of e-government channels, and simultaneously reduce the use of traditional channels?

There are several ways of increasing the use of e-government channels. Studies from the Netherlands showed that citizens prefer to be led to e-government channels through communication and a good service experience (Teerling & Pieterse, 2010, 2011). In Denmark, the government chose a different approach; they made e-government channels mandatory. This approach has multiple prerequisites, such as; widespread diffusion of broadband, ICT equipment and digital components, as well as digital literacy, and citizen trust in public authorities. Note that Denmark already had some of the highest citizen adoption rates for e-government in Europe, and probably the world, before the strategy was implemented. Making the services mandatory has increased the adoption rates, but it did not cause them.

Reducing the use of traditional channels is more complicated. First, public authorities must recognize that communication is not a zero-sum game. When citizens adopt a new communication channel, this does not mean that they stop using other channels. In fact, data from older channel choice studies showed that the overall traffic increases when new channels are added (Van Deursen & Pieterse, 2006). Second, public authorities are often split into separate divisions, which lead them to present information in a silo-like fashion, across channels and websites. However, citizen demands often cut across public authorities and benefit areas. Thus, the public service encounter that the citizen undertakes can involve multiple channels and interactions. Therefore, it is important that public authorities start by taking a holistic approach, and view the entire public service encounter, and the traffic that it creates as a whole. Then they need to take action. The following recommendations for such action expands those presented in paper #5.

Gather data on channel traffic. To allow for comparison, specific indicators need to be developed and applied. This is especially important as multichannel management often entails inter- and cross-organizational collaboration. For instance, telephone calls can be measured at several levels and must be compared at the same level; an incoming call cannot be compared to an answered call. Studying website traffic, such as where citizens arrive a portal, and where they come from provides valuable insight for marketing purposes, and to gain insight into citizens' online public service encounters.

Analyze the channel traffic data. This covers several areas, the first concerns studying patterns in traffic to identify the events, which generate traffic. This thesis has identified system-based events, which are typically recurring and regulated by law, and events in the life of the citizen. Other events, for instance media based or political, may also generate traffic. Next, identify the topics of the inquiry. Make sure to include caseworkers or others with direct citizen contact in this process. Ensure that those who generate this data have a thorough description of the possible classifications, for instance by having them develop these, and are well informed of the importance of data validity. To reduce their workload I recommend that such tracking only takes place

periodically. Finally, the system should allow the assigning of several causes to one call, and include an option to track repeated calls on the same service encounter.

Study the citizens. Direct observations of citizen interaction are necessary to gain insight into how they respond towards a service, and how the service encounter can be improved. Although such studies may be expensive, they can also be conducted quickly and fairly cheaply, for instance by talking to friends or relatives, colleagues or others in the workplace, without connection to the service in question. Studies of actual use offers a different perspective on the service encounter, than the professional, typically silo-oriented view that those in charge of the service might have. As this thesis has demonstrated, such citizen-oriented studies show that citizens' actual use and cross-channel interaction, is often different from what the public authorities had envisaged. It may include third-party channels, other public authorities, or other factors, which are of high importance to the citizens. Finally, it offers insights into the problems citizens experience from their point-of-view, to help solve these problems, or at least reduce them.

Iteratively improve the service encounter. The studies undertaken numerous problems, which caused citizens to use traditional channels. Rather than attempting to solve all of them at once, I will recommend an iterative approach, where solutions are gradually implemented. This provides faster results, and allows the administrators to track their impact. Technology develops at a rapid pace, by the time an authority has made a complete list of required changes, the world has changed, and other problems have appeared.

Continuous user tests should be conducted across all channels and from the users point-of-view, for instance in relation to a life event. In addition, user tests should not start at the specific section of the public authority's website, but from a blank page. My studies show that identifying the authority in charge of a specific benefit, and locating their website, and the correct section, are major tasks in themselves.

Increase the quantity of communication. The first goal of increasing the quantity of mass communication is to guide citizens to the e-government channels, the second is to ensure that they remain there. Following Medium Richness Theory the primary principle here is to supply the citizens with the information they need, in the context where they need it, by utilizing the knowledge from the studies.

This first goal can be achieved by the use of specific key words for online searches, phrases on the telephone system, and short urls that can be added to letters and other forms of written communication. A short url is an abbreviated web address which links to a longer address. An example of such a short.url is borger.dk/enlig, which links to the single parents' declaration. 'Enlig' is the Danish term for single. Such short url's are far easier to remember than a long, seemingly arbitrary link, and also easier to link to on the telephone in letters etc. To keep citizens on the e-government channel, it is important that they have an awareness of the task, and feel secure that they are doing the right thing throughout the encounter. Such awareness can be increased by utilizing the interactive features, for instance by checking information as it is

entered, and offering receipts upon completion of a task. Offering the chance to save entered data before a task is completed is another sought after feature. More expensive features include the sharing of content between public authorities, such as data on income and living conditions, allow for content to be pre-entered, preferably editable, into online applications. Finally, it is possible to add direct means of interaction with a caseworker through features such as text- or voice chat, or even co-browsing, where the caseworker can view the system from the citizen's point-of-view to offer help. Such features are expensive though, and might be saved for specific and difficult areas known to cause telephone calls or face-to-face visits.

Improve the quality of communication. The overall purpose here is to reduce both information uncertainty, and ambiguity thereby reducing the need for further communication. Few citizens are trained caseworkers or civil servants, and many lack administrative literacy, and have difficulty understanding the bureaucratic terminology. Citizens therefore may lack both specific information, or be unsure about how to interpret the available information. To increase citizen satisfaction and reduce citizen-initiated requests on traditional channels, public authorities must improve wording in written communications by explaining what is needed from the citizen in plain terms, and from the citizens' point-of-view. The communications should define what the citizen is required to do, how and where to do it, and when the task has been completed. Information about processing times and where to look for help is frequently requested. Harmonizing wording across channels, sections and organizations is also important, to reduce confusion and calls.

Remember third party channels. In some service encounters, citizens gain information through third-party channels, such as web-banking. Presenting information on such channels, for instance a brief note on the reason why a benefit amount has changed, followed by a link with a short url, is highly valuable as it helps the citizen in the right context, and feeds into existing habits. Other popular channels, which may be integrated into the public service encounter, include e-mail and text messages to inform of changed events. Although the official channels might be mandatory, citizens often use third party channels more frequently.

Present status updates online. The studies conducted for this thesis showed that many of the citizen-initiated requests concern status updates on existing cases. If this information is presented online, and the user is made aware of where to locate it, many requests on traditional channels can be reduced.

11.2 Quality criteria revisited

Previously, I have presented a series of quality criteria. If we return to Creswell's quality criteria, this thesis is in accordance with most, but not all of them.

I have used **multiple methods**, and **triangulated** the findings. I have presented and discussed initial findings with nine of the participants and with caseworkers on multiple occasions (**member checking**). This thesis contains a **thick description** of the Danish e-government strategy, as well as family benefits. The research papers also present such a description, keeping word count restrictions in mind. I have not, however,

presented information on the single parent's household neither here nor in the papers. Instead, I have presented information on several participants, which is relevant to specific findings. This thesis contains a section where I present my personal, academic and professional background and state my research philosophy. After the conclusion, there is a long section where I reflect upon life as an Industrial PhD scholar and how conducting applied science has influenced the study (**clarify bias**). I have occasionally **presented negative information**, and argued that there may be additional reasons for call reduction, and the pre-emptive channel positioning strategy represents an ideal, rather than a realistic goal. However, this is an area where I could have presented more counter-arguments. There is an obvious dilemma between the Popperian ideal of presenting counter-arguments on the one hand, and the need to have clear publishable results on the other. However, I have presented a detailed description of how I conducted the research, consistently sought to infer to theory, and used triangulation to validate findings. Moreover, I will not mind sharing the transcriptions of my empirical data to counter arguments of 'cherry picking'.

Although I have spent three years at ATP, I have **not spent prolonged time in the field**, as I have only visited each single parent once. This could definitely have yielded more insight on their individual situation. There is one problem related to this issue, however; most single parents have few interactions with UDK regarding family benefits. The infrequent interaction is problematic in relation to the prolonged time in the field, although a longitudinal study could generate data on their overall life, media use etc.

Peer debriefing has occurred through conversations with my supervisors (both at ITU and ATP) and through half-yearly progress reports, and the mid-term reviews. To a certain extent, the peer-review, processes and attendance at conferences and other presentations also serve this goal. My research data have **not been reviewed by an external auditor**. In fact, I would oppose such a review of the video-recordings, on the grounds that I have promised my participants anonymity. The transcribed material is anonymized, so that is an entirely different matter.

Reliability in qualitative studies

In terms of **checking transcripts for error**, I generally watch or listen to the recordings while I write and code, to pick up on important non-verbal information, and to make sure my interpretation is plausible. Even so, there are occasional spelling errors, and part of the recordings which are difficult to transcribe. This is especially the case the focus group discussions with six or seven participants, when everyone gets excited and talk at once. At one occasion, an orchestra started playing right outside the building.

One possible type of error, which I have not addressed previously, refers to the translation of statements from Danish into English. One particular problem is that my participants, like many Danes, swear frequently and often using swearwords imported from English, which appear much harsher to a British or an American than a Dane. I have sought to take this cultural difference into consideration, when writing for journals, while at

the same time staying as true as possible to the original transcription. I have deliberately steered away from a direct translation, in favor of my understanding of what the participants mean. My English is good, having spent a full year at an English University and lived with English students. Nevertheless, a professional translator may have rendered the sections differently.

I have **sought** to be **consistent in the application of codes**, and compared data and codes and **written memos**. Nevertheless, with several hundred transcribed pages and several coding iterations, as well as follow-up interviews, my own view of the codes has also changed over time, as I have.

The first literature review was written based on dual coding undertaken in collaboration with another PhD student, Jesper Berger. We **communicated regularly**, and shared results. The coding went through four rounds, and in the final round, we reached an acceptable level of **intercoder reliability**. However, it was hard due to our different backgrounds; Jesper is an Engineer, and I have a humanities background.

Quality Criteria in Action Research

Regarding **conceptual significance** and presentation of research, I have written two literature reviews and three research papers based on the studies. Four of these papers are published or accepted for publishing after peer-review, and one is currently undergoing review. Although reviewers have had many useful suggestions for improvements, none of my papers have been rejected. One of the papers received an outstanding paper award, while another has been published in a high ranking journal. The acceptance of the papers after being peer-reviewed indicates that they have been targeted towards relevant publication outlets, and their quality adheres to the standards within the e-government field.

Has my research **contributed to practice** and to reducing calls?

This question is especially relevant in relation to paper #5 on the single parents' declaration. I cannot state with certainty, that our actions are the direct cause of the decline in calls. Learning is likely to be a contributing factor. Nevertheless, the problem owner, ATP, believes that our actions have resulted in a decline in calls. Comparing the 2013 and 2014 communication surrounding the declaration, I will argue that these changes have contributed to the reduction in calls. The study has generated interest from practitioners: municipalities, the Agency for Digitization and the Ministry for Economic Affairs and the Interior. Moreover, I continue the collaboration with ATP and ITU in a co-financed post-doctoral position. The aim will be to conduct a series of interventions, like the one reported in paper #5, and document the effects on channel traffic, citizen satisfaction etc. Hereby, the research will contribute further to practice.

Generalization and delimitations

So to what extent is it possible to generalize from this thesis?

That depends on what kind of generalization one is seeking. I will not make statistical generalizations from a qualitative study with 28 participants. The participants represent a particular group; single parents mostly in their 40's who live around two Danish cities, and agreed to participate in this study. Within this group however, are both men and women, of quite different background and with different levels of education, who live in an urban and rural setting. Some had only recently become single, while others have been so for decades. There was one immigrant in the study, the rest were born in Denmark.

The study was undertaken in a one-year period in 2013-2014 while the mandatory digitization strategy was being implemented. The focus group discussions were conducted while the single parents' declaration was active. And it was conducted by a particular researcher, myself, with certain goals in mind.

Thus, the practices and insights I have found are not exhaustive, but must take the research context into account. If I had conducted studies with different participants and/or benefit areas, I would probably have learnt of other practices. A study with pensioners might have generated more knowledge on the importance of digital skills, whilst a study of students might have put more emphasis on social networking services. A study from a developing country would almost certainly yield different results.

However, data from several sources confirms my findings, as do the participants themselves. I have sought to infer to theory rather than to the general population. Overall, the findings are in line with the Domestication framework; people find ways of making technologies their own, they influence each other, and are influenced by their previous experiences, values and existing routines. Many findings are also in line with previous channel choice studies: people's habits are important, when they know what they are looking for text-based channels such as websites will suffice, when more complicated problems arise, people turn towards channels which offer direct interaction, be it with 'warm experts' or caseworkers. Such generalization to theoretical concepts is merited, following Halkier, Blaike, Krueger and others.

I have focused mostly on the managerial aspects, and chosen not to pursue other areas, such as:

A lack of focus on aesthetics. Several of my participants did comment on borger.dk being ugly and uninviting. I chose not to pursue it or the objectification aspect in general, because the e-government channels are physical and not displayed to others as such. In my discussions with the Agency for Digitization, one civil servant stated that the websites were not that visually appealing, but people have to use them anyway. Perhaps a better-looking website might be more positively received. It is unknown if it would increase people's patience, and reduce calls.

Mobile e-government. As it was not possible to login to borger.dk via mobile platforms when I conducted my focus group discussions, my studies do not cover mobile platforms, except for a brief section in paper #5,

where I partly attribute the increase in response speeds for the 2014 declaration to mobile platforms. This is an area where more research is needed.

The use of social networking services. This is also a major area, especially in relations to the exchange of experiences, existing media habits and warm experts.

Gender. As mentioned previously, the Norwegian branch of Domestication theory has a strong emphasis on gender. Gender clearly matters in terms of who gets custody of children following a divorce or break-up. Eight in ten single parents in Denmark are women. Although most of my participants are women, I have not focused on this aspect in the thesis. I did not find any differences in terms of how the male or female participants used, or talked about, the self-service applications. Participants' level of education and experience with the benefit system was much more important. Also, Danish women and men are at almost the exact same level in terms of adoption of e-government services, whereas there are great differences in adoption levels if one regards education or age (Statistics Denmark, 2014).

11.3 Contributions to the research cycle

The following lists the main contributions from the thesis research cycle.

1. *Literature reviews*

Through two literature reviews, the thesis presents an analysis of the 50 most cited papers within e-government, and offers a detailed presentation of the channel choice branch. The thesis presents several methodological and knowledge gaps in existing e-government and channel choice studies, most importantly a lack of studies of actual use, which are needed to provide detailed and context-based recommendations to public authorities. The remaining papers in the thesis seek to cover these gaps.

2. *The research context: Channel choice in a mandatory post-adoption setting*

This research project has been undertaken in a mandatory post-adoption setting, among a highly competent group of citizens, the majority of which have already adopted e-government channels. This is a new context for studies of citizen channel choice, and adds to the novelty of the thesis. Previous studies on citizens' channel choice, and the majority of studies on citizens' e-government adoption in general, assume that people are free to choose from multiple channels, and have frequently revolved around how to increase the adoption rates of e-government services (Madsen & Kræmmergaard, 2015; Teerling & Pieterse, 2010, 2011). This thesis studies what happens after citizens have adopted e-government.

3. *The theoretical framing and level of analysis*

Previous studies have sought to explain channel choice from by studying individual factors, technological and contextual factors (Madsen & Kræmmergaard, 2015). These studies are partly grounded in adoption models such as TAM (Davis, 1989) and diffusion of innovations (Rogers, 2003), which are influenced by

psychological behavior models. Thus, previous studies have focused on analyzing channel choice from an external point-of-view, and at the level of the individual (Blaikie, 2010).

This thesis employs a theoretical framework, Domestication theory, which assumes *'that people construct their own technological practices, but in interaction with other people's practices'* (Sørensen, 2004, p. 1). The thesis contributes to channel choice studies by studying channel choice at the group level, and exploring the social processes, whereby citizens share and shape their practices for interacting with public authorities.

4. A study of actual use, as told by real users

Informed by Domestication studies, the thesis contributes to e-government and channel choice studies with an in-depth study of actual use, and the multi-channel cross-organizational interactions that occurs in public service encounters, rather than hypothetical or generic settings. Moreover, the thesis provides new insight into this process, and offers an understanding of citizens' practices from an internal point-of-view (Blaikie, 2010; Madsen & Kræmmergaard, 2015b).

5. The importance of underlying values

Previous channel choice studies have not studied the importance of values (Madsen & Kræmmergaard, 2015). Some e-government adoption studies have included trust, as an independent variable (Bélanger & Carter, 2008; Carter & Bélanger, 2005). However, these studies limit trust to being a variable, which influences the adoption rate positively or negatively. Inspired by Domestication studies and the concept of 'the moral economy of the household' (Silverstone & Hirsch, 1992), this thesis contributes to the e-government and channel choice literature by analyzing how citizens' values and perceptions of public authorities influence their choice of channels and subject matter in a public service encounter.

6. A longitudinal study of how to increase adoption rates and simultaneously reduce calls

The thesis presents a mixed-method longitudinal study of how a public authority succeeded in increasing the adoption rates for an e-government self-service application, while simultaneously reducing telephone calls by improving the quantity and quality of its communication (Madsen & Kræmmergaard, n.d.). Thus, the thesis contributes to the e-government and channel choice studies with specific recommendations regarding what to do and how to do it based on multiple studies of actual use. It also presents a longitudinal study of a cross organizational collaboration, whereby traffic on traditional channels was successfully reduced.

7. Alternate ways of using technology

The final contribution from the thesis' application of Domestication theory is that it demonstrates that citizens' do not always do as they are expected to. People find ways of making things their own and shape them according to their own needs, whether it expected interaction on a website, a law regarding family benefits, or a national decree to use specific channels for interacting with public authorities.

Inspired by Knut Sørensen (in conversation) and Bakardjieva's notion of '*Appropriating the appropriators*' (Bakardjieva, 2005, p. 17) the thesis argues, that citizen creativity can be a source of inspiration for public authorities, and they can improve the efficiency and quality of their communication channels by iteratively incorporating and thereby accommodating these alternate use forms .

This leads us to the next section, which contains the thesis' contributions to practitioners and to the problem solving cycle.

11.4 Contributions to problem solving cycle

The purpose of this section is to provide additional practical recommendations from my studies. This section extends the presented recommendations from papers #3 – 5, where they have been limited due to the length restrictions of journal papers.

Overview of benefits (payment finder)

When citizens become single, or find themselves in a life-changing situation, their benefit eligibility often changes. Benefit eligibility was a frequently mention problem of the single parents participating in my studies. My participants get this information from friends and relatives ('warm experts'), third party websites, and caseworkers. After being introduced to the Australian Centerlink during my stay abroad in the Netherlands, I searched the internet for additional benefit finders, and found several from English speaking countries. A screenshot from the Australian payment finder is presented in Figure 10 below.

Payment Finder

Select one or more options from each row that best describe your circumstances. Then, choose 'Read more' to see a list of suggested payments to investigate further.







Your age Help Reset

Move the numbered box left or right to select your age

16 24 **45** 64

Choose **one or more options** from each section that best describes your situation. Hold your mouse over a button to see more information

Work and study ?

					
Student or apprentice	Looking for work	Working full time	Working part time	Retired	None of these

Children ?






				
Expecting or adopting	Children under 8 years	Children 8-15 years	Children 16 or older	None of these

Fig. 11. Screenshot of the Australian Centrelink's payment finder. 11-11-2015

To the best of my knowledge, and according to Paul Henman, an Australian scholar who has studied Centerlink, no studies have been conducted on the channel traffic effects of such benefit finders. From a citizen point-of-view, benefit finders could help solve the silo problem and provide information on benefit eligibility, thereby significantly increasing the usability of the public websites.

From an administrative and political point-of-view benefit finders pose two problems:

1. A benefit finder may not reduce the total amount of traffic to public authorities regarding benefits. Some calls may be reduced, while others will be generated as citizens get increased awareness of their rights. Further, if the benefit finder leads to an increase in benefit recipients (which it probably will), there will be an increase in calls regarding these benefits. Without results from any studies on this topic, it is not possible to say if these second order effects will cancel or supersede the initial reduction in calls.
2. A major political problem is how to finance the increased costs in the total amount of benefits paid out. In 2014, UDK paid out roughly 200 billion DKK in public benefits to 2 million Danish citizens. If everyone who was legally eligible claimed all the benefits, which they were entitled to, this amount

would rise. This would have to be financed by changing the legislation concerning benefit eligibility or benefit tariffs, by reducing spending in other areas, or by raising taxes.

While the first problem is within ATP's realm, the second is absolutely not. ATP has no legal mandate to get involved in the political discussions concerning public benefits. That is a matter for the elected politicians.

Web banking and third party channels

The study of single parent's Domestication of mandatory e-government services (paper #3) shows that many use non-government third party channels to receive information regarding their benefits. To my participants Web-banking is often a primary channel to get information about incoming payments. If there are changes to the benefit amount, they seek for information through other channels, for instance by calling UDK. In 2014, the recipient did not receive any explanations concerning changes to benefits in the web-banking statements.

Adding information to the web-banking statement, and by presenting a short-url citizens can access more information, which is likely to reduce some of the calls concerning payments.

Meta-data on digital post

It is possible to sign up for a notification sent as an e-mail or SMS when one receives digital post. There is a general increase in the amount of digital post sent from authorities. Previously, most post was sent at the beginning or end of the month, as this was tied to payments. Today, there is a much greater diversity in times when post is sent because there are more senders, and the digital post covers more areas. This means that it is difficult for the post recipient to use contextual information (time of month, sender) as an indication of what the post concerns. Unless citizens develop habits for checking their digital post, the increase in the amount of post sent increases the likelihood that people will overlook their digital post and miss important information. To accommodate the demand for more information about incoming payments, and reduce calls related to payments, I suggest that public authorities provide more information regarding digital post.

At the time of writing, little information is presented about the digital post. To increase awareness of important post, authorities could additional information could in the title field. During the focus group discussions, one participant said she wanted to be made aware of when 'something was important', that is, when she has to act upon it. Thus, a meta-data system for digital post related to benefits should at least:

- Provide basic information about the sender (UDK) and the title of the letter (payment letter)
- Inform about the purpose of the digital post, i.e. is it strictly meant to inform, or does the citizen need to act upon it?

Such meta data could increase citizens' awareness regarding digital post. At the time of the study, all digital post required the same level of attention, whether it was important to the citizen or not.

12. Reflections on being an Industrial PhD

This section contains my reflections on being an Industrial PhD student, and how the project has been affected by being an applied research project co-funded by a private company. It also contains my reflections on interacting with the Agency for Digitization, which is both responsible for the national e-government strategy, and an evolution of my previous workplace, the National IT- and Telecom Agency, Denmark.

While traditional Ph.D. students are employed at the Universities, Industrial PhD's are employed by the Enterprise, which co-funds the research project along with the Danish Innovation Fund. This employment was not a mere aspect of the project, which I had to adjust to; it was the basis for the project, and affected the development throughout the entire period, especially in the first half. Both the initial research questions, which focused on increasing the adoption rates of self-service applications, and the revised research questions, which focused on reducing traffic to traditional channels, were developed in collaboration with ATP. As an Industrial Ph.D. project the thesis represents applied research rather than basic research. This has meant that analysis and theoretical development, i.e. answering why questions, are reduced in favor of offering practical recommendations, i.e. providing solutions for how things can be different. The reason for this downscaling is simple: Time. I have had three years for this project, not five or six.

The responsibility to revise the RO and downscale the theoretical contributions is, of course, mine alone.

12.1 The development of project proposal and presence in ATP

The project proposal was developed at a series of meetings between ATP, ITU, myself and second candidate in 2011-2012. Due to the involvement of the other candidate, and to sharpen the scope of the projects, we decided that my project focused on citizens' adoption of self-service applications, while the other project would concern design processes for mobile applications from the developing organizations' point-of-view.

As is required by the Innovation fund, I spent half my time at ATP and the other time at ITU and host Universities. From 2012 – spring 2014, I spent three days a week at ATP, after which I spent one to two days a week there. Although I have not conducted casework, I have been a regular employee for three years in the development section of the Digitization division. I have attended weekly division meetings, bi-weekly team meetings, and been assigned an enterprise supervisor whom I have regularly discussed the project with. In addition to these professional meetings I have also become friends with many of the employees, and participated in (and arranged) Friday afternoon beer sessions and a popular quarterly board gaming event.

Being physically situated at ATP for three years, and being close to UDK caseworkers has clearly influenced the project. On the one hand, I have had virtually unlimited access to data and people an extent, which I presume many fellow scholars envy. I have not been denied access to people or data at any time in three years. Nor did I have to make a case as to why I needed this data, or to talk to people. When I wanted data, I

asked the person responsible. If I needed to talk to an ATP or UDK employee, I booked a meeting in their calendar. This access and the participation in team and staff meetings for three years, has provided a solid insight into large-scale digitization projects, and an empirical basis and understanding of online self-service applications as well as the importance of the surrounding communication on other channels.

Further, I have had the luxury of being able to offer suggestions for improvements and see them carried out within a short time span. In some cases, this meant offering suggestions for changing the text on *borger.dk* and seeing them implemented on the spot. It also meant that it became possible to include a before and after study (Paper #5) in the thesis, something which was not originally planned.

My local presence in ATP affected the project, especially in terms of continuously being aware of various problems experienced either by citizens, or ATP as administrators. This kept me thinking about the practical and managerial aspects, and how my project could contribute to ATP and single parents. In addition, I kept a close eye on the adoption rates and traffic data to UDK, at times on an hourly basis. In spring 2013, two events occurred which greatly influenced the project. The first came from gathering empirical data on traffic to UDK and seeing the adoption rates for the online self-service application. Although the adoption rates were above 95 percent, people kept calling. This was a revelation, as it showed that contrary to most e-government literature high adoption rates are not always enough to achieve an economic success or content citizens. Reading the Dutch channel choice literature strengthened and focused this insight. The channels in balance project showed how channels can supplement, rather than replace each other. By combining these events, I found that the adoption of digital channels may not always lead to a reduction in traffic, but can also be the cause of additional traffic. As the initial goal of the project had been met (getting the adoption rates above 80 percent), and there was a clear gap in the literature regarding offline traffic reduction in a post-adoption environment, the decision to change the Research Question was not hard to make.

12.2 Knowledge dissemination

Industrial Ph.D. student do not have duty hours or teaching responsibilities for the university. Instead, we have knowledge dissemination duties, which are accommodated by giving presentations, participating in meetings and writing articles.

Since 2012, I have held 18 presentations at ATP, three presentations for the Agency for Digitization, and three presentations for the Ministry for Economic Affairs and the Interior. Further, the Agency for Digitization has interviewed me in relations to upcoming digitization strategy and consulted me regarding the development of digital post. I have held nine presentations at ITU, and presented four papers at International Conferences. I have also hosted a seminar at ATP along with two other PhD students, Jesper Berger and Søren Skaarup, where more than 100 employees from ATP and UDK participated. Finally, I have co-written an editorial about the Danish Digitization Strategy published in the Danish newspaper *Berlingske*

Tidende. Appendix I presents the full list of activities and presentations. The editorial and the response by the Director General of the Agency for Digitization are included in Appendix IV (in Danish).

The presentations have served several purposes. They have been a way to present and discuss findings, as part of the knowledge dissemination requirement. However, they have also served as an opportunity to get feedback on preliminary findings, to refine arguments, and to offer and discuss possible improvements for self-service applications. The target groups for these presentations and discussions have ranged from co-workers to directors at ATP, developers, UDK caseworkers, fellow national and international scholars, and finally policymakers responsible for the e-government strategy and for public sector renewal. Along with the citizens I have spoken to, each of these groups has influenced and been influenced by the e-government strategy in different ways, and has offered their own unique perspectives on the project. It has forced me to think about, explain, and be exposed to vastly different perspectives on what digitization entails.

12.3 On constructive criticism and walking the managerial line

The digital division of ATP where I was employed, has frequent dealings with the Agency for Digitization. A lot of this interaction concerns UDK's presence at borger.dk, which generates a large share of the traffic to this portal. Prior to becoming an Industrial PhD student I worked for nearly five years as a civil servant in the Danish National IT And Telecommunications Agency, part of which later grew into the Agency for Digitization. As a former employee, I know many employees in the Agency, some of whom are close friends. I have experienced the development of the digitization strategy and related IT-strategies at first hand, and contributed to developing the statistical frameworks used in relation to these strategies. My experience as a civil servant has taught me two things, which I have applied in my interaction with the Agency for Digitization and Ministry for Economic Affairs and the Interior in relation to the Ph.D.

1. Numbers carry more weight than words in a public policy context. Qualitative findings may be regarded as interesting, or good examples to prove a point, but they cannot stand alone. They need to be backed up by quantitative data to gain attention.
2. Findings and suggestions, which offer improvements to existing policies receive far more attention than mere criticism. The Agency for Digitization is part of the Ministry for Finance, and the main argument for increased digitization is economic savings. If one wishes to be heard by this Agency and make a difference, it is vital that one's comments feed into this managerial reasoning, and contains suggestions for how to improve the efficiency and quality of the services.

Thus, when presenting my project and findings to the Agency for Digitization, the Ministry of Economic Affairs and the Interior, I have strived to offer constructive criticism, and argue for how the implementation of such changes will lead to increased public sector efficiency as well as more satisfied citizens. Moreover, I have used quantitative data and examples from previous studies and the general digital development to back

up my claims. This does not mean that I have restrained myself from criticizing the digitization strategy, nor have I claimed that digitization can solve all administrative problems. On the contrary, when presenting findings and discussing on how efficiency gains can be made, I have repeatedly underlined the importance of inter-organizational collaboration, user studies and improving language, elements which are only in-directly tied to digitization. Further, when the Agency for Digitization hired a consulting company to interview me regarding my project and the single parents' declaration, I insisted on the right to approve my statements to ensure that these points were included, so it was not merely labeled as an example of the marvels of digitization (Deloitte Consulting, 2015). Following the advice of spin doctor Malcolm Tucker from the British Television series 'The Thick of It', I have walked the managerial line.

12.4 Limitations of being an Industrial PhD student

My employment in ATP has limited the scope of the project. ATP's interest in the project is primarily managerial. It would have been difficult for me to be too critical of UDK and the digitization strategy as an ATP employee hired to improve the adoption rates of online services. While critical projects and projects focusing solely on the negative aspects of digitization are also needed, I do not believe they belong under the Industrial PhD scheme. At the same time, I will claim that my project has contributed to improving the quality of online services for single parents. Such improvements would be difficult to attain with traditional Ph.D. that was perceived as too critical by those who were in charge of conducting changes. An example of such a critical project is Jesper Berger's (2015) study of the problems (harm) mandatory digital post causes to municipal employees. His thesis provides a deeply personal account of the evolution of his project including the clashes he had with the Digitization Agency. Jesper and I have had many long discussions on how one should influence public digitization, and how to approach the Agency for Digitization.

One drawback to being at ATP three days per week was that I became too focused on the descriptive and the practical aspects of the project, limiting the conceptual and theoretical development. There was no pressure from ATP for me to do casework, but I was continuously exposed to a specific mindset, which limited my ability to get the necessary academic distance. To follow Blaikie's terminology, I spent too much time on the 'What' and 'How' research questions rather than the 'Why'. A related challenge is that the world keeps changing, and I have been studying a moving target. I conducted the empirical studies between the spring of 2013 and summer 2014. But I kept learning about new developments at ATP and could follow the channel traffic after this period. In late 2014, my University supervisor Pernille Kræmmergaard therefore suggested that I spent as little time as possible at ATP to focus on the existing data and get the necessary theoretical and analytical distance to complete the Ph.D. So in early spring 2015, I only spent one day per week at ATP, and the remaining four days at ITU. This helped me get back into the academic mindset.

Now I can't wait to get back and continue the studies.

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13. Appendices

I: Timeline for problem interest and research interest cycles

2011		
Timeline	Activities for problem interest cycle (ATP)	Activities for research interest cycle (ITU)
October	Job interviews at ATP and presentation of plans for Ph.D. project	
2012		
Timeline	Activities for problem interest cycle (ATP)	Activities for research interest cycle (ITU)
January - April	Development meetings with ATP and ITU on Industrial Ph.D. project proposal	
	Write Industrial Ph.D. application for Innovation fund and Ph.D. application for ITU	
August	Start of Ph.D.	
	Presentation of project for team	
September		Presentation of project for Digital Media and Communication Group (DMC) at ITU
	Presentation of project for ATP's Business Division	
October	Presentation of Statistics Denmark's ICT Household survey for division	
December	Presentation of findings from literary review of e-government (Paper #1) for division	
		Presentation of Statistics Denmark's annual ICT surveys and Telecommunications statistics for DMC group at ITU

2013		
Timeline	Activities for problem interest cycle (ATP)	Activities for research interest cycle (ITU)
February		Discussion of literary review of e-government (Paper #1)
March	Presentation of statistics on Danes' ICT use for web-editor group	
	Presentation of Ph.D. project for ATP's directors' group	
April	Pilot studies in call center	
April	Quiz at division meeting about preliminary results from studies in call center	
April - May	Focus group discussions in Copenhagen and Vordingborg	
August	Presentation of preliminary findings for business division and head of Family benefit section	
September	Study abroad at The Center for E-government Studies at Twente University	
		Participation in course at Utrecht: User-Centered Design of New Media
		Meetings with Dutch Tax and Customs Agency on channel strategies
October	Discussion of preliminary results with UDK caseworkers	Discussion of preliminary results for DMC group at ITU
	Presentation of Dutch experiences with channel strategies, and update on project for ATP's digital division	Presentation of preliminary results at OpenIT arrangement at ITU
November	Discussion of findings at Ministry for Economic Affairs and the Interior	
December	Presentation of project at seminar on digital citizenship for public employees	
	Presentation and discussion of results for ATP's business division	
December 2013 – June 2014	Follow-up interviews with selected participants in their own homes	

2014		
Timeline	Activities for problem interest cycle (ATP)	Activities for research interest cycle (ITU)
January	Half-day seminar at ATP on digitization with Industrial PhD's Søren Skaarup and Jesper Bull Berger	
February	Meeting with Ministry for Economic Affairs and the Interior on digital self-service applications	Presentation of Paper #3 (single parent's Domestication of mandatory self-service applications) at the Scandinavian Workshop for E-Government 2014
	Editorial in Berlingske Tidende (with Søren Skaarup and Jesper Bull Berger)	
February - April	Participation in improvement of single parent's declaration	
March	Presentation of findings at ATP director's strategy seminar	
	Presentation and discussion of findings at the Danish Agency for Digitization	
May		Presentation of Ph.D. project and life as an Industrial PhD student at ITU
September		Presentation of Paper #1 (e-government literature review) at E-GOV conference 2014, Dublin
October	Discussion of Paper #3 (single parents' declaration) and possible technological improvements with e-Boks	
	Presentation of Paper #3 (single parents' declaration) at the Danish Agency for Digitization	
November	Presentation of Paper #3 (single parents' declaration) for web-editor group	
		Discussion of Paper #3 (single parents' declaration) with DMC group
December	Interview with Deloitte on Ph.D. project for Agency for Digitization and e-government strategy 2016 - 2020	

2015		
Timeline	Activities for problem interest cycle (ATP)	Activities for research interest cycle (ITU)
January	Participation in evaluation meetings on single parents' declaration	
February	Presentation of Paper #3 (single parents' declaration) at the Ministry for Economic Affairs and the Interior	
		Presentation of Paper #3 (single parents' declaration) at Scandinavian Workshop for E-government, 2015
	Participation in ITU film about Ph.D. project and the Industrial Ph.D. scheme	
March	Presentation of Paper #3 (single parents' declaration) and a preventive channel strategy for ATP directors	
April	Study abroad at Department of Interdisciplinary Studies, NTNU	
		Presentation and discussion of research project and Paper #3 (single parents' declaration) and Paper #4 (single parents' Domestication of mandatory self-service applications) at NTNU
May	Presentation of Paper #5 ('warm experts') for web editors at ATP	
		Guest lecture at Service Design course ITU, Paper #3 (single parents' declaration)
June	Presentation of: Paper #2 (channel choice literature review), Paper #4 (single parents' Domestication of mandatory self-service applications) and Paper #5 (warm experts)	
September		Presentation of Paper #2 (channel choice literature review) at E-GOV conference 2015, Thessaloniki

II: Basic information about participants and focus group composition

Alias	Age	Gender	Occupation
Focus Group 1. Copenhagen, April 23rd 2013.			
Monica	42	F	Nurse
Maja	36	F	Student
Tina	42	F	Office clerk (unemployed)
Lis	42	F	Self-employed artist, teacher
Lene	41	F	Student
Tanja	41	F	Actor
Sten	47	M	Carpenter (unemployed)
Focus Group 2 Copenhagen, April 30th 2013			
Ulla	45	F	Psychologist
Louise	42	F	Student, hairdresser
Hanna	38	F	Student, graphic designer
Linda	39	F	Janitor (unemployed)
Focus Group 3 Copenhagen, May 2nd 2013			
Susan	42	F	Office clerk
Belinda	40	F	Office clerk
Tine	41	F	IT project coordinator
Maria	46	F	Head stewardess
Gitte	41	F	Director
Focus Group 4 Vordingborg, May 22nd 2013			
Dorte	50	F	Pedagogue
Glen	42	M	Painter
Anne	43	F	Pre-school teacher
Elizabeth	50	F	Childminder
Susanna	43	F	Accountant
Tom	45	M	Canteen manager
Focus Group 3 Vordingborg, May 23rd 2013			
Laila	51	F	Janitor
Sanne	45	F	Head nurse
Janni	45	F	Office clerk
Marianne	38	F	Student, factory worker
Ditte	37	F	Childminder (unemployed)
Kim	47	M	Civil servant

III: Framework for focus group discussion

Introduction by moderator

Introduce project and moderators. Explain purpose of project and what will happen during focus group discussion. Explain camera and promise anonymity.

Introduction by participants

Please introduce yourself, who you are, what you do, the age of your children, and your experience with family benefits.

Warm-up question

Is there anything in particular related to these benefits going on at the moment?

The single's declaration

[If they mention the single parent's declaration show them the letter, otherwise wait.]

- Was anything particularly easy or difficult in relation to the declaration?
- [Remove letter] Who is the sender?
- Could anything be improved in relation to this letter and the declaration?
- Is there anything in particular which is difficult in relation to your situation and communicating with public authorities in general?

Exercise 1 – Use of communication channels for interacting with public authorities

[Use handouts]. Here are images of six different communication forms for interacting with public authorities. Please discuss the benefits and drawbacks of these communication forms.

- Please indicate the channels you have use to contact public authorities related to family benefits within the last year (approximately).
- When do you use the various communication forms?
- Which one would you use if you had to apply for family benefits today? You don't have to agree, but please keep discussing this until you are clear about how you agree or disagree.
- Which one would you use if you have received another amount than you usually do? Again, please keep discussing until you are clear about how you agree or disagree.

[Break – serve food and drinks]

Exercise 2. Statements regarding communication forms.

[Use ready made statements and communication icons].

- Please discuss which of these statements you think are best suited for the telephone.
- Repeat with internet and again with digital post
 - Please elaborate on your choices
 - Why or when don't you use self-service applications?
 - Why do you call, and what do you typically call about?
 - What do you do if you have questions, who do you contact?

Exercise 3. Private and public self-service applications

- Here are three online self-service applications; Tax, web-banking, and order plane tickets.
 - How many have used these self-service applications?
 - What are good and bad things with these applications?
 - Please rank how hard it would be to conduct these tasks without the self-service applications.
 - How do these applications differ from borger.dk and the family benefits self-service applications?
 - Are there any other good self-service applications you would like to mention?

Final questions

[Only use these if the topics have not been brought up by the participants during the focus group.]

- What would the perfect self-service application for family benefits look like?
- Do you have any comments regarding public self-service applications in general?
- Do you have examples of good public websites?
- What about mobile self-service applications?

Rounding off

Thank participants for showing up and participating. Present gifts. Inform participants of anonymity again, and that they have the option of having statements from transcripts deleted.

Forventninger til den digitale fremtid

Af Søren Skaarup, ErhvervsPhD, Christian Østergaard Madsen, ErhvervsPhD og Jesper Berger, ph.d.-stipendiat

3. februar 2014, 22:30 – **opdateret** 17. februar 2014, 16:08

Danskerne tror grundlæggende, at der er store perspektiver i digitaliseringen af offentlig service, men vi er bekymrede for at de bliver sværere at realisere end nødvendigt, på grund af urealistiske forventninger.

Danskerne er blandt de meste digitale folkefærd i verden. Vi har et højt uddannelsesniveau og en på mange måder velfungerende offentlig sektor, som borgerne fortsat generelt har høj tillid til. Samtidig har vi en af de mest ambitiøse offentlige digitaliseringsstrategier. Det burde være opskriften på succes! Vi tror da også grundlæggende, at der er store perspektiver i digitaliseringen af offentlig service, men vi er bekymrede for at de bliver sværere at realisere end nødvendigt, på grund af urealistiske forventninger, utilstrækkelige digitale løsninger og en i stigende grad fragmenteret offentlig sektor.

Forventningerne til gevinsterne ved digitaliseringen virker ofte urealistiske, både i forhold til deres omfang og hvor hurtigt de kan opnås. De digitale løsninger understøtter i mange situationer kun en del af det, der foregår i mødet mellem borger og myndighed. Det kan derfor være begrænset, hvor meget man sparer alene ved, at borgeren indsender ansøgninger digitalt. Borgerne har stadig en række behov, som de ønsker at få opfyldt ved personlig kontakt, enten i skranken eller på telefonen.

Her er ikke bare tale om en lille restgruppe af borgere med særlige udfordringer. Alle borgere kan stå i en situation, hvor de har behov, de ikke kan få opfyldt digitalt eller mangler forudsætninger for at kunne klare tingene selv, og derfor har brug for i det mindste at supplere det digitale med en opringning, eller måske med at møde op personligt.

Det gælder ikke mindst, når man står i en ny og ukendt situation, hvor man ikke har nogen viden eller erfaringer at trække på, og det kan være svært at komme i gang selv. Her er det vigtigt, at der er medarbejdere med viden, indsigt og tid til rådighed, som kan bidrage til en afklaring, så borgeren eventuelt kan fortsætte i en digital løsning.

Mange borgere kommer og ringer derfor fortsat til offentlige myndigheder, også før, under og efter at have sendt en ansøgning digitalt. Noget tyder faktisk på, at det samlede antal henvendelser ofte stiger i takt med, at borgerne bliver mere digitale. Det udhuler effektiviseringen.

Ganske paradoksalt kan man derfor godt nå de succeskriterier, man har opstillet, uden at det strengt taget er en succes. Besparelserne tager man - som så ofte før - på forhånd, og det kan derfor være svært at sige, om de er opnået på grund af digitalisering, ved at medarbejderne løber hurtigere eller ved, at servicen er blevet forringet, særligt når man sjældent måler på alle disse effekter. Målet om 80 procent digitale ansøgninger fører heller ikke nødvendigvis så meget effektivisering med sig som antaget, hvis der samtidig er øget trafik på de andre kanaler, eller hvis man i forvejen ikke brugte så mange ressourcer som antaget på det, digitaliseringen reelt erstatter.

Der er derfor behov for mere åbenhed om den måde, effektiviseringspotentialet beregnes på, så man kan sikre det bedst tænkelige fundament, før man går i gang med at udvikle en løsning eller omlægge organisation og arbejdsgange. Der er også brug for, at indsatsen måles på en måde, der rent faktisk kan vise effekten på alle væsentlige parametre.

Der har i den seneste tid været mange eksempler fremme på digitale løsninger, som er utilstrækkelige, og som forudsætter viden og indsigt, som de færreste borgere besidder. Der findes heldigvis også gode løsninger, som f.eks. »at melde flytning på nettet« og »ændre forskudsopgørelse«, som begge er pæne succeser. For mange løsninger falder dog stadig igennem på den fundamentale brugervenlighed, og det fører igen til mere ressourcetræk på andre kanaler. Men selv brugervenlige løsninger løser ikke nødvendigvis problemer for borgere, der ikke er gode til at læse, ikke er gode til dansk, eller synes det er svært at formulere sig skriftligt, og brugervenlighed gør det ikke nødvendigvis nemmere at håndtere en situation, man aldrig før har været i, eller situationer, hvor man føler sig i klemme eller udsat.

Ofte skyldes løsningernes utilstrækkelighed, at borgernes og de offentlige medarbejders erfaringer og indsigter har været fraværende i udviklingsprocessen, eller først er blevet efterspurgt på et tidspunkt, hvor det var for sent. Den måde, løsningerne kommer i udbud på, gør det ofte også svært for IT-leverandørerne at bringe deres kreativitet og erfaringer i spil og svært at bruge nye indsigter vundet i selve udviklingsprocessen til ret meget.

Der er behov for langt større fokus på brugervenlighed langt tidligere i udbuds- og udviklingsprocessen - også selv om det indledningsvis måtte gøre løsningerne dyrere. Borgernes viden og erfaringer, og erfaringerne hos de medarbejdere, der er i kontakt med borgeren i det daglige, skal udnyttes bedre, og man bør indrette sig på, at udviklingen af en selvbetjeningsløsning aldrig stopper, men er en løbende læreproces, der først rigtigt går i gang, når første udgave er taget i brug. Når det er blevet obligatorisk for borgerne at være digitale, bliver kravene til drift-stabilitet og kravene til myndighedernes evne til at holde deres del af »aftalen« også større. Der bør altid være »hul igennem« og sikkerhed for, at myndighederne svarer og selv bruger de kanaler, de kræver, at borgerne anvender, f.eks. at alle myndigheder modtager og svarer på digital post, når nu de kræver det samme af borgerne.

Der er arbejde i gang for at sikre bedre løsninger, men de fleste af dem ser vi formodentlig først et godt stykke tid efter, at det er blevet obligatorisk for borgerne at være digitale, og effektiviseringsgevinsten skulle være taget hjem.

Med kommunalreformen blev der slået meget på »kommunerne som borgernes samlede indgang til den offentlige sektor«. Siden er antallet af forskellige myndigheder, som borgeren kan have brug for at komme i kontakt med vokset (f.eks. Borgerservice, Skat, Jobcenter, Ydelsescenter og Udbetaling Danmark).

Dette problem forstærkes af digitaliseringen, der ofte foregår siloopdelt med beskeden sammenhæng på tværs. Det bliver derfor i stigende omfang borgerne selv, der skal skabe helhed og sammenhæng på tværs af myndigheder. Med fragmenteringen bliver det også stadigt sværere at placere ansvaret for den helhedsorienterede og tværgående service, som borgerne nu har mere brug for end nogensinde. Risikoen er, at flere borgere falder »mellem stolene«, at flere borgere får forkerte svar, og at fragmenteringen fører til kassetænkning, så borgerne ikke får de ydelser, de har krav på.

Der er behov for en langt bedre sammenhæng - både teknologisk og organisatorisk - mellem de mange myndigheder, borgerne er i kontakt med. Der er brug for, at alle aktører påtager sig et medansvar for at skabe helhed og sammenhæng i indsatsen - på alle servicekanaler - og for at modarbejde tendensen til at »sende aben videre«. Det handler både om at arbejde med en fælles service-kultur, at bringe ledelsen langt tættere på, hvor servicen leveres, og de digitale løsninger implementeres, og om at sikre en klar placering af ansvaret for sammenhængen på tværs.

Der er eksempler på digitaliseringsprocesser som er vellykkede, og på myndigheder som gør det godt. Desværre lader sådanne succeser sig ofte ikke bare sådan lige kopiere, men derfor kan man godt lære af dem. Men der er også en række fundamentale udfordringer, vi er nødt til at tage fat i, hvis vi skal opnå de gevinster, digitaliseringen kan bringe. Vi er nødt til at være langt mere realistiske og videns-baserede, når vi anslår effektiviseringspotentialer. Vi er nødt til at give mere plads til læring i den måde, vi udbyder opgaverne, og den måde vi implementerer dem på. Vi er nødt til at tage borgerne og deres forudsætninger og behov alvorligt - også når det betyder, at det mest fornuftige for borgeren i den konkrete situation er at vælge digitaliseringen fra. Endelig må vi indse, at god offentlig service kræver helhed og sammenhæng mellem kanaler og mellem aktører - og at der er dele af interaktionen mellem borgere og myndigheder, der hverken kan eller skal digitaliseres.

Digital fremtid er godt på vej

Af Lars Frelle-Petersen, direktør i Digitaliseringsstyrelsen
17. februar 2014, 22:30

»Logikken er, at jo flere kunder, der er til løsningerne, jo mere opper myndighederne sig og laver gode løsninger.«

Digital kommunikation med det offentlige er godt i vej og giver god mening for både borgere, virksomheder og samfundsøkonomien. Men der er stadig arbejde med at gøre det lettere for borgerne at bruge de digitale muligheder.

Tre forskere satte i en kronik i Berlingske 4. februar luppen på, hvad de synes, vi skal arbejde med, for at komme i mål. Og vi tager altid gerne imod gode råd. På et par punkter er jeg dog ikke helt enig med forskerne. De anfægter, at der er det forventede effektiviseringspotentiale på ca. to milliarder kr. om året og efterspørger åbenhed om, hvordan vi regner på, at digitalisering kan betale sig. Jeg anerkender, at det er et ambitiøst mål, men i de beregninger, som staten, regionerne og kommunerne har lavet i fællesskab, er der taget hensyn til, at der f.eks. skal bruges ekstra ressourcer i en overgang. Borgerservicecentrene vil opleve, at flere borgere skal have hjælp til at komme i gang, og selve løsningerne skal udvikles til at blive mere brugervenlige. Det er indregnet i den samlede økonomiske beregning, som i øvrigt ligger til fri læsning på vores hjemmeside, og som vi altid gerne går i dialog om.

Jeg er heller ikke enig i, at digitalisering forstærker en fragmentering af den offentlige sektor. Tværtimod er en samlet hjemmeside som borger.dk vel netop et godt bud på, at borgeren ikke skal vide, hvilken myndighed der står for adoption, begravelseshjælp eller børnepenge, men kan gå ind via én samlet indgang. Udbetaling Danmark, som nævnes i kronikken, har slet ikke sin egen hjemmeside, men bor kun på borger.dk. NemID bygger ikke alene bro i den offentlige sektor – tænk hvis alle løsninger havde deres egen TastSelv-kode – men også til den private sektor.

Det stærke fællesoffentlige samarbejde er da også en af de absolut væsentligste grunde til, at vi i Danmark er internationalt førende, når det gælder digitalisering. Og noget af det, som udlandet er allermest optaget af at lære af, når vi har besøg af udenlandske delegationer. Når det er sagt, er der selvfølgelig udfordringer, inden vi er i mål, f.eks. som kronikken peger på, at vi skal have et øget fokus på brugervenligheden i de digitale løsninger. På dette felt oplever jeg en stigende erkendelse og lyst til at give bedre digital service. Også her i mit eget hus, hvor borger.dk skal blive endnu nemmere at anvende end i dag.

80 pct. af al relevant offentlig kommunikation vil i 2015 være digital. Allerede i dag anvender f.eks. 73 pct. af danskerne den digitale løsning, når de skal anmelde flytning. Logikken er, at jo flere kunder, der er til løsningerne, jo mere opper myndighederne sig og laver gode løsninger. Fordi vi ved, at det giver borgerne en god service, og fordi det kan betale sig for den enkelte myndighed. Jeg tror ikke, at danskerne havde fået bedre digital service af, at vi havde siddet og ventet på denne udvikling, men er sikker på, at politikerne har sat den helt rette forpligtende proces i gang, som vi så har det store ansvar for at levere. Det er der mange gode kræfter, som arbejder for hver dag i hele landet.

V: Co-author statements

Declaration of co-authorship

Co-authors should fulfill the requirements of the Vancouver rules¹

1. Title of article:

Madsen, C.Ø., Berger, J.B., and Phythian, M. 2014. "The Development in Leading E-Government Articles 2001-2010: Definitions, Perspectives, Scope, Research Philosophies, Methods and Recommendations: An Update of Heeks and Bailur," *13th IFIP WG 8.5*

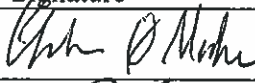

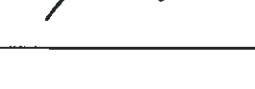
2. Declaration of the individual elements

The extent of the candidate's contribution to the article is assessed on the following scale

- A. has contributed to the work (0-33%)
- B. has made a substantial contribution (34-66%)
- C. did the majority of the work (67-100%)


	Author 1	Author 2	Author 3
1. Formulation in the concept phase of the basic scientific problem on the basis of theoretical questions which require clarification, including a summary of the general questions which it is assumed will be answered via analyses or actual experiments/investigations.	B	B	A
2. Planning of experiments/analyses and formulation of investigative methodology in such a way that the questions asked under (1) can be expected to be answered, including choice of method and independent methodological development	B	B	A
3. Involvement in the analysis or the actual experiments/investigation	B	B	A
4. Presentation, interpretation and discussion of the results obtained in the form of an article or manuscript.	B	A	A

3 Signatures

Date	Name	Title	Signature
18/3-15	Christian Ø. Madsen	PhD-student	
20/3/15	Jesper B. Berger	PhD-student	
	Mick Pythion	PhD	

“All persons named as authors must satisfy the authorship requirement. The order of names must be a joint decision taken by all authors. The individual author must have participated in the work to a sufficient degree to be able to accept public liability for the content of the scientific work. Authorship can only be based on substantial contribution with regard to: 1) conception and design or analysis and interpretation of data, 2) drafting the article or revising it critically for important intellectual content, and 3) final approval of the version to be published. *Involvement based only on obtaining funding for the work or collecting data does not qualify for authorship, neither does general supervision of the research group in itself qualify as authorship.* If the authorship is collective, key persons who are responsible for the article must be identified. The editors of the scientific periodical may ask authors to account for their part in the authorship.”

3 Signatures

Date	Name	Title	Signature
	Christian Ø. Madsen	PhD-student	
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Co-Author Statement

I hereby declare that I am aware that the work in the paper

Madsen, Christian Østergaard & Kræmmergaard Pernille (2015). Channel Choice: A Literature review. In: Electronic Government: Proceedings of the 14th IFIP WG 8.5 International Conference, EGOV 2015, vol. 9248. 3-18.

of which I am a co-author, will form part of the PhD dissertation by

Christian Østergaard Madsen

who made a

- major
- proportional 70%
- minor

contribution to the work both in the research and writing phase.

Signature: 

Name: Pernille Kræmmergaard

Date: 18/11-2015

Co-Author Statement

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Signature:



Name: Pernille Kræmmergaard

Date: 18/11 -2015

VI: The papers

Paper #1. “*The development in leading e-government articles 2001-2010: definitions, perspectives, scope, research philosophies, methods and recommendations. An update of Heeks and Bailur*”.

Authors: Madsen, Christian Østergaard, Berger, Jesper Bull & Phythician, Mick

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The development in leading e-government articles 2001-2010: definitions, perspectives, scope, research philosophies, methods and recommendations. An update of Heeks and Bailur

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Abstract. This paper presents a study of the development in leading e-government papers from 2001-2010. Inspired by a study by Heeks and Bailur, the analysis uses a different sampling method, adds new themes, and focuses on changes over time. Through an iterative process known as template analysis the five most cited papers from each year are analyzed according to themes such as perspectives on the impact and impact causes of e-government, methods used, underlying research philosophies and recommendations. Findings indicate that the papers are still somewhat optimistic regarding the impact of e-government, but no longer as technologically deterministic. Discussions of research philosophies start to appear, as do social constructionist studies, although most papers are still positivistic. There is an increase in the use of primary data, and some movement in focus from infrastructure and services towards citizens. There is little development in the discussions of generalization of results and recommendations offered.

Keywords: E-government, literature review, template analysis

1 Introduction

Heeks and Bailur [22] reviewed e-government literature from 2001-2005 and state that narrow and poor research practice predominates [22, p. 260]. Yildiz [50] – from a literature review in the same period – finds e-government research to be of a ‘deductive, outside-in approach’ and states that these exploratory and descriptive studies ‘do not tell us what is happening inside the black box of e-government’. According to Ndou [37, p. 3], ‘one of the reasons why many e-government initiatives fail is related to the narrow definition and poor understanding of the e-government concept, processes and functions’. The need for a thorough understanding of e-government is thus perhaps even more salient now.

Having stated a need for more in-depth knowledge of e-government the authors have conducted an e-government literature review from 2001-2010 as an update of Heeks and Bailur [22] to reveal how the e-government research field has changed.

This paper examines the most cited papers' perceptions of what e-government is, what e-government is about and how e-government is performed. This is done by adopting the scales from Heeks and Bailur (e-government impact, impact causes, research philosophy, methods and recommendations) and adding the researchers' own scales of e-government content, which we believe has changed over time, at least within the most cited papers.

2 Related work

The initial analysis for this literature review showed a major growth in papers using the term 'e-government' around 2001, which was also when two of the most cited works in the field were published; Layne and Lee's article on the development of e-government stage models [32], and Jane Fountain's study of the interaction between IT and institutions [58]. These works differ in many of the aspects that we analyze. Layne and Lee's work is mostly conceptual and is technologically deterministic and optimistic [32]. It outlines a fixed path for e-government and the changes it will bring to organizations. Fountain presents three in-depth case studies and 'the technology enactment framework', a theory with a socio-technical standpoint that information technologies are changed by institutions, but also cause changes in these institutions as they are applied. Fountain argues that technologies are not always used the way the producers had intended [58]. This is a case often made outside the e-government field [72] but one that does not fit well with stage models or adoption models, where citizens' actions are typically limited to either adopting or rejecting the technology in question.

Previous literature reviews of e-government have focused on specific journals [22, 62] developing countries [13, 78], individual countries [73], or specific themes such as adoption [61, 75] or trust [51]. Others [50] did not base their review from a set sample of papers but instead focused on an in-depth discussion of certain themes. An alternative approach is found in bibliographical reviews which include several hundred papers but cover only certain areas available either from abstracts [65] or analyzing data from bibliographic databases [54].

None of these studies measure the papers in their literature reviews according to how frequently they have been cited. However, in one study [77], authors apply a network approach to literature review by aggregating results of studies that used the Technology Adoption Model (TAM) [57] to predict citizens' adoption of e-government. This approach provides an overview of how frequently certain hypotheses were tested and validated. A similar meta-analysis has been conducted by Rana et al. [70].

Heeks and Bailur [22] analyzed eighty four articles published between 2001 and 2005 with 'e-government', 'e-governance' or 'digital government' in the title. The articles were chosen from three sources 'identified as the leading e-government-specific research outlets' [22] Government Information Quarterly, Information Polity and conference proceedings from European Conference on e-Government. They used template analysis [63] to analyze five main aspects of the articles 'whose selection was influenced but not determined by earlier research analyses in information systems

and in public administration.’ [22, p. 246]: Perspectives on impacts and impact causes, research philosophies, theory, methods, and recommendations.

Heeks and Bailur criticized the e-government field for being too optimistic and technologically deterministic, lacking theoretical basis and references to research philosophy, poor treatment of generalization, and lacking practical recommendations [22, p. 243]. Further, many authors were criticized for staying in their offices and thinking about how the development within e-government could, or worse, should take place, rather than actually conducting empirical studies [22, p. 257]. This led to articles suffering from ‘naïve optimism’. Heeks and Bailur did find, however, that around half the authors criticized some of the positive statements about e-government, and a majority did not have an entirely technologically deterministic view on the impact causes of e-government [22, p. 249].

None of the literature reviews since Heeks and Bailur were based on in-depth analysis of the development over time across the e-government field. One of the primary purposes of this study was to see if the criticisms of Heeks and Bailur [22] had made an impact and whether there had been any development in the areas they mentioned. It was decided to use citation intensity as the primary selection criterion since the authors wanted to study papers from across the field that were frequently acknowledged through references. As a partly interpretative analysis was conducted, the researchers could not be sure that their interpretations were the same as Heeks and Bailur [22], it was therefore decided to include papers from both before and after the Heeks and Bailur study.

3 Theory

Template analysis (TA) [63] is a technique for analyzing texts using a template, which may contain initial themes for analysis but is developed through several iterations of reading and coding. King recommends that scholars start by coding a segment of the total texts and discuss areas of disagreement to develop the template. Through these iterations the development of the template becomes part of the analysis [63]. TA offers structure to an analytical process, but also flexibility in developing the template to suit the study. It has been applied for both quantitative and qualitative analysis by researchers with different epistemological positions [64].

Heeks and Bailur [22] based the perspectives notion on Rowe and Thomson [71]; so the authors returned to that source, where researchers’ perspectives on the implications of IT are placed on a continuum from optimistic and technologically deterministic to pessimistic and socially deterministic.

The technological determinists regard technology as ‘an autonomous force which compels society to adapt to it’ [71, p. 20] and brings positive changes such as economic benefits and improved living conditions. Historical periods are classified by technology (Bronze Age, Information Age etc.) with technological revolutions in between. They typically study the long-term societal impact of technology.

Around the middle of the continuum are authors who regard technology as neutral, and study how political, cultural and other factors influence technology use and development. Rowe and Thomson [71] describe these authors using terms as ‘socio-

technical', 'social shaping' and 'social constructionist'. Although different 'they all examine the way boundaries between the 'social' and 'technical' are negotiated, rather than accepting them as given.' [71, p. 24]. They emphasize peoples' and societies' choice in how technologies are used, and focus at the institutional level.

The social determinists regard technology as a social product, and often mention negative effects such as unemployment, pollution and surveillance. Instead of revolutions they believe in incremental change [49], and 'argue that technologies are found because they are sought; and are adopted, designed, released, applied and controlled by those trying to protect their own interests.' [71, p. 27].

Heeks [60] and Heeks and Bailur [22] developed Rowe and Thomson [71] separating it into two continua, thereby creating a two-dimensional field on which to place authors according to their value statements on the impact and impact causes of e-government. The first dimension measures the potential perspectives on introducing e-government from purely optimistic to purely pessimistic; the other dimension measures the causes of the impact from technological determinism to social determinism. The midpoints consist of a neutral perspective with statements about both positive and negative impacts and a socio-technical perspective on impact causes with 'value statements about IT enabling or supporting outcomes that are also guided by human agency' [22, p. 247]. The researchers note that it is the potential impacts of introducing e-government that are measured, issues such as failed implementation or lack of adoption are not taken into account.

In their analysis of how the policymakers' perception of e-government has evolved Chadwick and May [10] present three models labeled as:

- Managerial – An offspring of e-commerce and New Public Management this model regards e-government as a tool to improve the 'business' of governance, to make it faster, cheaper and increase customer (citizen) satisfaction.
- Consultative – According to the consultative model governments can use IT to 'pull' information and opinions from citizens in order to improve policymaking. This is the first step towards improving democracy through the use of IT.
- Participatory – Chadwick and May [10] describe the participatory model as having 'utopian leanings' in its description of a 'cyber civil society' (p. 277) where citizens participate in democratic processes facilitated by IT.

4 Method

Citation intensity was chosen as the sampling criterion to study the papers with largest impact in the e-government field. It was drawn from Google Scholar using Publish or Perish. Employing Scholar included more sources, but limited triangulation due to unknown search algorithms, a similar search in Web of Science, for example, resulted in a narrower search base. Due to the Google search robot control constraints, the search was extended over several days.

The same starting year was used as Heeks and Bailur [22]. Analysis of citation intensity from 2012 (when the analysis was begun) showed that a paper had passed its inauguration period after two years, making 2010 the latest possible end year. Citation history analysis of the most cited papers from each year showed that they tended to

stay in their position, due to the Matthew-effect [69]; papers keep getting cited because they have been cited previously or appear in certain journals [66].

The search criterion was that 'e-government' should be in the title. 'e-government' is the predominant notion (compared to 'e-governance', 'eGovernment' etc.). Due to resources available, only the five most cited papers every year were included. The sample is given in the 'Literature review sample references'.

The sample of fifty papers (see appendix B) included forty nine papers from 23 peer reviewed journals (nineteen from GIQ and seven from PAR). Thirty four would have appeared if Web of Science had been used. The papers that would not have appeared are generally those with the least amount of citations. All the papers with most and second most citations were included in the Web of Science sample.

The authors do not claim that citation intensity is equal to high quality research, only that it is an indicator for commonly acknowledged research, thus impact research. Scholars, however, do not necessarily reference all of their influences [67] and they also may cite research that they are not influenced by [66]. An extended scan of key words could validate this claim.

TA provided structure to the analysis and also encouraged the inclusion of new themes from the papers analyzed. From the coding of the first batch, it was discovered that the definition and type of e-government had evolved over time; hence these items were included. The definition type was taken from [10] and later collapsed into two values (managerial and consultative/participatory) due to unclear use in papers. A change in e-government application, level and practice emerged, thus we included these. [22] was included in the sample as one of the top five cited in 2007. It was discussed whether this paper which worked as a template for our analysis should be excluded for blocking the existence of a 'real' e-government research paper, but decided to stick to the method and keep the paper. A scale to distinguish between research on research and research *per se* was created. Some researchers employed very optimistic statements about the impact of e-government' [31], whilst other researchers were less optimistic, but more due to adoption and implementation issues than to e-government impact as such [e.g. 46]. The authors introduced Heeks to this and he agreed that this could make the comparison difficult, on this basis a scale was created stating whether 'not so optimistic' impact was due to adoption or implementation issues.

The coding was done in four iterations by two of the authors. Each iteration was finalized during whole-day meetings, where results were discussed and coding guidelines adjusted accordingly. The template was uploaded as an online questionnaire and adjusted after each iteration; adding scales after the first two iterations and deleting scales after the third and fourth. The first two batches (15 papers) were re-coded after the second iteration due to added scales and updated coding guidelines.

The researchers strived to achieve data simplicity by using single-value coding; for eleven scales such as data collection methods multiple choice answers were necessary. The use of single choice coding had implications. A coding as 'neutral' on the optimism/pessimism scale can either stem from a paper having no value statements, [e.g. 20] or expressing both optimism and pessimism in the same paper [e.g. 3, p. 243]. The final template contained twenty three scales in total (see appendix A); fourteen scales from [22], (e-government perspectives, philosophy, method and recom-

mentations), three that supported [22] and six new scales (e.g. e-government definition type, application and level).

The online template included space for coders' comments. After the first iteration it was discovered that these comments were not precise enough to recall reflections from reading the papers. It was then decided to add text citations to every coding. This led to shorter and more text focused arguments and increased discussion speeds significantly.

Initially the intention was to reach agreement on all scales through discussion, argument and reflection. An almost systematic deviation in coder differences on perspectives was revealed after the first iteration. One coder (with a natural science background) coded papers as more optimistic and technology deterministic than the other coder (with a humanities background). Reflecting on the statement from Heeks and Bailur that 'the same particular impact can be perceived by one stakeholder as positive while perceived by another stakeholder as negative' [22, p. 248] and after long discussions about perspectives, it was decided to accept a deviation of one point on the five point scale, and use the mean instead. For all papers, the scales for perspectives and research philosophy (considered the ones with highest degree of interpretivism), were discussed for agreement.

For the first two iterations (15 papers) coding was discussed and mutual agreement reached. For the last two iterations, the work was distributed and each coder elicited the common coding from the written argument and citations. After the third iteration there were 142 disagreements from coding of 15 papers (59% intercoder reliability); after the fourth iteration, there were 70 disagreements from coding 20 papers (85% intercoder reliability).

5 Results

This section describes the results of the analysis of the fifty most cited e-government papers in 2001-2010 by comparing the results to what Heeks and Bailur [22] found and by examining the evolution from the first five-year period to the next, if any.

5.1 Perspectives on e-government

Impact from e-government (from optimistic to pessimistic) and impact causes (from technological determinism to social determinism) in the two five-year periods and average, are depicted in Figure 1. Papers were mostly optimistic during the whole period, with a tendency towards less optimism in the late period. A change is seen in impact causes from mostly technological determinism in 2001-2005 to a more balanced socio-technological view in 2006-2010, but with increased deviation.

No papers were found to be wholly pessimistic and only one was slightly pessimistic, the rest were coded neutral to optimistic. The statements ranged from full scale 'cyber-optimism' [12] where the impact is inevitable and unquestionable, e.g. that the second e-government stage 'is the beginning of the e-government as a revolutionary entity, changing the way people interact with their government.' [32, p. 128] to a slightly more reserved, but still positive outlook. The potential negative impact, e.g.

privacy, security and the digital divide are treated more like barriers for adoption than regular drawbacks.

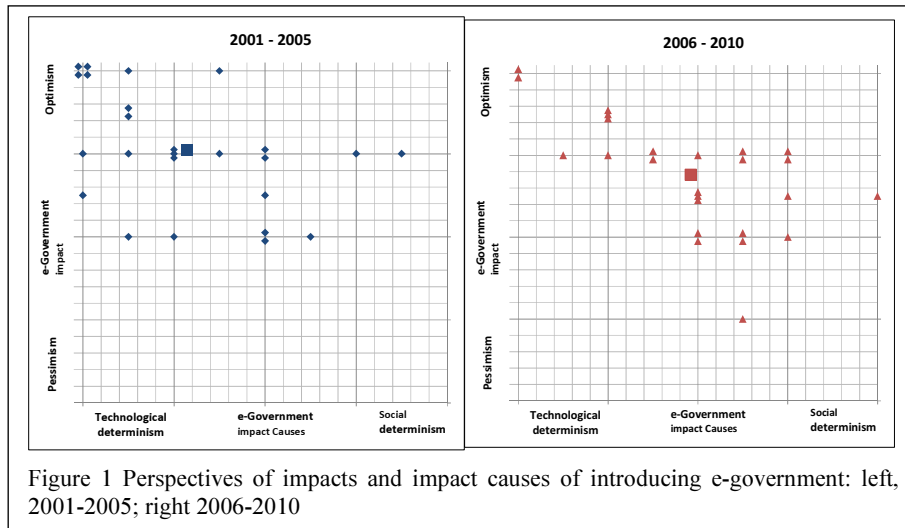


Figure 1 Perspectives of impacts and impact causes of introducing e-government: left, 2001-2005; right 2006-2010

Coursey and Norris [12] criticize e-government stage models, Schuppan [40] is critical of e-government treated as a universal phenomenon that can easily be applied to developing countries, Heeks and Bailur [22] and Yildiz [50] criticize the research field. The digital divide hinders certain groups in society from achieving the benefits of e-government, resulting in ‘long-lasting and widening economic gaps’ [4, p. 117]. Coursey and Norris [12] state that e-government may ‘simply reinforce existing power arrangements.’ [12, p. 534]. The most critical group of papers concerns developing countries, e.g. increased corruption [40]. However, these papers also recognize positive impacts from e-government.

There was a notable development in impact causes from mostly technological determinism in 2001-2005 to socio-technical in 2006-2010. Where technology determinism rules, the Internet is the force that transforms the public sector [23, p. 434]. For the social determinists, it is use that shapes technology, which is regarded as an empty shell that carries the values of those that have chosen to have developed it, and those that use it in their everyday life. Moreover, the authors argue that these interests carried by technology are enacted by public sector organizations in their daily actions and routines [58], so that the outcome of e-Government reforms is shaped by the e-Government policies’ aims and goals, the technological characteristics shaped by these policies and the organizational practices which ultimately shape the actual outcomes of the reforms.’ [11, p. 2].

Thirty two papers contain a definition of e-government. The increase in papers without definitions over time could be regarded as higher certainty of the central notion and increased maturity. Although not all papers have explicit definitions, there was an underlying understanding of e-government as ‘the use of the Internet to deliver services and information to citizens and businesses [39, p. 52]. Sometimes e-government plays an active transformational role, e.g. ‘as a tool to achieve better

government' [45, p. 288]. Actors are mostly defined as citizens (and businesses) although a more exhaustive range is sometimes used, e.g. 'citizens, business partners, employees, other agencies, and government' [32, p. 123].

Chadwick and May [10] saw a predominance of the managerial model over time and argue that 'the democratic potential of the Internet has been marginalized' Chadwick and May [10, p. 271]. The authors found signs of the managerial model in almost all papers; forty nine of fifty papers included 'efficiency' or 'costs' in the text. Half the papers still contained statements regarding e-government as citizens empowerment or enhanced democracy [15, p. 211].

5.2 What is the scope?

Several papers from the second period concern papers from the first. Three papers from 2006-2010 were meta-studies. Heeks and Bailur [22] and Yildiz [50] analyzed and criticized the research field, while Coursey and Norris [12] criticized the stage model approach [32] extended by Andersen and Henriksen [3] and synthesized by Lee [34].

Half the papers have government and four of ten had citizens as object of study. Only one paper investigates interaction with businesses [39]. Even though, many papers include government employees in the e-government definition, only one paper studies employees and government institutions [11].

Ten papers study e-government in developing countries [4, p. 4]. Another group of studies (eight papers), are concerned with the stage model view to e-government [32, 36, 39, 48, 49], a synthesis of models [34] and criticism of stage models [3, 12]. Although some papers state that the study is about 'local government', 'government' is mostly treated generically with few characteristics except for size.

Forty eight of fifty papers include 'citizen' in the text. Factors that impact citizens' perception of e-government services (the demand side) are reported in one-fifth of the papers; trust [8] and risk [24] together with factors of the behavioral models constitute an almost archetypical form of statistical treatment of survey data to test hypotheses. Citizens are typically treated generically as well e.g. 'The term 'citizen' is used in this paper to indicate all constituents of e-Government, including resident aliens, businesses and other potential users of e-Government.' [46, p. 162], and with a few exceptions [42] include demographic and geographic variables and political affiliation.

Services are an integral element of the e-government definition and it appears in the vast majority of the studies. The underlying assumption is that services are something that governments offer and that citizens can choose to use as stated by AlAwadhi and Morris [1] 'e-government services are highly voluntary'. This view makes the adoption process pivotal to e-government. Adoption is investigated using services as a general notion to be adopted by citizens [e.g. 1, 5, 24, 33, 42]. Other studies investigate specific services; tax filing [5, 8, 26, 46], automobile registration [5, 6, 8] and use of e-mail communication [17, 49]. Studies deduce from either the general 'service' concept or from one or (in one case) two specific services to conclusions about e-government as such; e.g. Lean et al. [33] concludes from the general notion for services that 'perceived usefulness, perceived relative advantage and perceived image have significant positive relationship with citizens' intention toward

using e-government services'. Carter and Bélanger [8] note that 'Clearly, the answers were influenced by the nature of the online services selected', recognizing the influence of the specific service that is investigated.

Examples of services are given: 'business license' [e.g. 32] or an exhaustive service taxonomy: payments, communications, licenses etc. [e.g. 29], however, only one definition of service has been found: 'Features were defined as 'services' if the entire transaction could occur online' [49]. Types of services are mainly derived by the e-government stage model as information or transaction. Kumar et al. [31] find service quality crucial for adoption and presents five critical service quality factors.

The e-mail responsiveness study by West [49] is the only study of e-government services in use, the rest are studies of – at best – description of use, intention to use or purely conceptual.

Many of the early papers described e-government at a conceptual level; they would present e-government, discuss potential impacts, or predict its adoption. Only a few of the most recent papers [11, 17, 40] contained in-depth analysis of actual use.

The political development in recent years has also created new areas for study. E-government services are now becoming mandatory in several countries. How does this affect citizens, both users and non-users?

Recognizing that e-government is multivariate and complex, it is surprising that little attempt to elaborate on, detail or dissect these often stated assumptions – or to even question the assumptions are seen, at least not within the most cited papers.

No in-depth studies of 'government', 'citizen' or 'service', either on a conceptual, theoretical or practical level are found. Scholars have argued that e-government applies to many domains and that no one model can be found [e.g. 56], yet no studies investigate or compare e-government in different domains. E-government is governed by legislation, politics and economy, yet, we see no studies of national government impact on how e-government is enacted in different public domains, institutions or levels. Organizational adoption can be tricky [68, 76]; the role of top and middle managers are key [55, 59], however, none of the most cited papers deals with organizational issues within e-government. Acquisition- and tender processes, vendor relations, platforms or technology don't have the focus of the most cited papers. There are few studies that strive to encompass an overall model of e-government, e.g. an Enterprise Architecture view [14] or relevant internal and external technological, organizational, human themes etc. [18, 37]. These studies provide a starting point for more detailed analysis.

Finally, none of the studies in the sample investigate the participatory, democratic or empowering element of e-government at all even though half of the papers refer to this in the definition of e-government or consider for the negative impact of e-government.

5.3 How is e-government investigated?

Heeks found that in only one of seven papers it was clear 'that the researchers had left their own offices and ventured out to do their research' [22, p. 257]. Only in five studies (one of ten) in the sample, researchers had left their offices to collect qualitative data from interviews, observations and focus groups.

As Heeks and Bailur [22] noted in 2007: ‘This might, for example explain the absence from some research of the human, social, and political elements that more easily become apparent during direct contact with data subjects and settings’ [22, p. 257]. We can repeat this seven years later; further, we can state as Heeks and Bailur [22]: ‘those who had clearly left their office took a balanced sociotechnical perspective on e-government [22, p. 257].

The use of primary data increased over time. Twelve papers from 2001-2005 used primary data, compared to seventeen from 2006-2010. Further, five papers in the first period did not present any data compared to only one paper from the second period.

Four of the fifty papers contained longitudinal studies. Chadwick and May [10] studied e-government agendas across a decade, West [49] examined budget data from 1998-2000 and the development of content on US state and federal web sites from 2000-2001, Norris and Moon [38] analyzed results from two surveys on local governments’ adoption of e-government, and Tolbert et al. [44] examined the development of e-government in US states from 2000-2004. Note that these studies covered the supply side of e-government. There were no longitudinal studies of e-government use by the demand side. There was a slight increase in studies that describe methods for data collection and analysis. Few papers, however, provide constructs for the research field to validate, criticize etc. Less than half the papers had discussions of validity and generalizability and there was no development in this over time.

Heeks and Bailur [22] found practical e-government recommendations in half their sample and ‘three-quarters gave a few single sentence or, at best, single paragraph recommendations. Only four gave any specific guidance on how practitioners should take action’ [22, p. 258]. In contrast, two thirds of the authors’ sample gave recommendations; one third only provided recommendations of *what*, [34]. One third provided recommendations of *how*, [37]. Few studies contained comprehensive recommendations, other than Carter and Bélanger [8, p. 19].

In line with Heeks and Bailur (2007) we found that recommendations are seldom comprehensive. Further, we found fewer studies with specific *how* recommendations and more studies with *what* recommendations over time. Besides being sparse, recommendations point in many different directions (economy, website design, human skills etc.). No studies offer reflections on *applying* recommendations; i.e. political, strategic or tactical concerns, thus being of limited value for practitioners.

Heeks and Bailur found no references to research philosophies, although they labeled them. In contrast, the authors’ study found that the field has developed and polarized since. In line with their findings, there was no reference to research philosophy in the 2001-2005 sample. However, five papers from 2006-2010 did contain brief references to research philosophy. They were either labeled as ‘murky middle’ or social constructionist.

Almost three quarters of our sample were labeled positivist. Eight papers included definitions of independent and dependent variables and contained statistical testing of hypotheses. Five papers (one from 2003, four from 2006-2010) were labeled social constructionist, even if more than one quarter of the papers refer to Fountain, primarily ‘The virtual state’ [58]. This may imply that researchers try to balance their work by citing a constructionist scholar. We find only one study, however, that states the specific impact of Fountain’s work on the specific research [11].

The study shows the following regarding the most cited papers from 2001-2010:

- They remain positive about the impact of e-government, but have become less technologically deterministic. Many authors still attribute the impact of e-government to technology alone
- The hypothesized benefits are mostly within the ‘managerial model’: reduced costs as a result of increased effectiveness and efficiency and better customer service
- The scope has changed from conceptual to a larger focus on actors e.g. citizens
- Government, service and citizen (the core of e-government) remain undefined
- Many e-government internal issues remain uninvestigated
- An increase in research maturity; more meta-studies, more primary data, more use of research methods, and more references to research philosophy over time
- A lack of descriptions of methods and generalizability of results. Very few studies use longitudinal methods, and there is little development in this area.
- Recommendations are sparse, more ‘what to do’ than ‘how’ to do.
- The underlying research philosophy in vast majority of studies remains positivistic.

6 Implications

Longitudinal studies can provide answers to questions and insights that are unattainable through cross-sectional studies [53]. Methods such as panel studies or time series [53] could be used to gain insight into citizens’ or employees’ actual and continued (or discontinued) use of e-government services, and what happens after adoption. Moreover, longitudinal studies can provide some directions to the path of e-government. Transaction data has been recommended as suitable data for this purpose [3]. Another option could be to analyze the publicly available data from surveys of enterprises’ and households’ use of IT and e-government by the UN, OECD, and EU. Without longitudinal studies we are left with limited knowledge of the impact of and on e-government, and the underlying drivers.

The vast majority of papers in the sample represent an optimistic and positive view on e-government ranging from improved efficiency [29], reduced costs [37], faster services and enhanced quality [21], accountability and transparency [4], increased citizens’ trust in government etc. The ‘executive managerial model’ [10] is by far the most predominant view; forty nine of the fifty papers include ‘efficiency’ or ‘costs’ in the text. Apart from the case studies from developing countries [e.g. 30, 37, 40], no paper offers any proof of e-government actually delivering the often claimed benefits.

In this study the researchers have analyzed the five most cited papers from each year from 2001 to 2010 with ‘e-government’ in the title. Would the picture have been different if ten papers had been selected? It is not known if the trend has changed since 2010. Has big data strengthened the focus towards specific domains or has social media introduced another view of the citizen? Both tendencies may be due to their novelty but may introduce more exploratory studies and move the focus away from positivism. A bias may have been introduced into the sample by only using ‘e-government’ as search criterion, especially as ‘e-governance’ may have included more papers with the participatory/democratic scope. The authors consider that this study compares to Heeks and Bailur [22] despite the same sample collection method

not being used. The first five years in the sample coincided with the predecessors and the same patterns were seen. The relatively small amount of papers in this study is a limitation, especially as it compares results over time, meaning there are only 25 papers in each group. The authors have tried to account for this limitation by comparing the results to other literature reviews, where possible, and by conducting an in-depth analysis with detailed examples from the papers studied.

7 Conclusions

The most cited papers on e-government have matured since the study by Heeks and Bailur [22]. There is more rigorous use of methods for data collection and analysis; more creation of primary data. Apart from this, we found pretty much the same patterns as they did, in some regards, we even saw a less diversified research field, including an overly optimistic e-government view based on strong technology determinism; a more positivistic approach and very few researchers that actually engaged in contact with data subjects and settings. E-government is agreed upon as governments delivering services to primary citizens through the internet. In this paper it is shown that the key notions in e-government, being governments, services or actors, all are treated rather vaguely, unsystematically and with no reasoned motivation, thus the e-government research scope seems unfocused. The most cited papers within e-government research do not distinguish between types of government/public institutions or types/form of services and mostly ignores actors other than citizens, i.e. other public institutions or businesses; employees (that perform e-government) are entirely invisible; even citizens are treated evenly, no distinction between different segments of citizens' different needs and capabilities. This could explain why researchers' recommendations were consistently vague, unsystematic and unfocused.

Technology has matured, national e-government strategies and e-government initiatives are now part of the everyday political agenda, governments and institutions implement these initiatives and there are examples of states making government' digital services mandatory along with fiscal consequences, central government reducing state funding according to anticipated enhanced efficiency from implemented e-government initiatives. Cases where citizens have missed important information from public institutions because new e-government initiatives have emerged (a case in Denmark was settled on appeal and the public institution had to change e-government practice and treat citizens' cases differently [74]) and cases, where civil servants express serious fatigue and stress due to performance pressure in combination with poorly aligned e-government technology and work practices that lead to low quality and errors in case handling, also have emerged [52].

The authors consider that there is a need for more balanced, qualitative and quantitative studies, more longitudinal studies and more contact with practice together with a further maturing of e-government research and not least a greater self-awareness from researchers of underlying perspectives and philosophy along with a more critical approach may move the research field to be better able to match the current e-government practice, thus ensuring the research fields' *raison d'être*.

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Appendix A. Template with coding scales

1	What is the impact of introducing e-government?
5	Optimistic, 4 Mostly optimistic, 3 Neutral, 2 Mostly pessimistic, 1 Pessimistic
2	What are the impact causes?
5	Technological determinism, 4 Slightly Technological deterministic, 3 Socio - Technical, 2 Slightly social deter., 1 Social determinism
3	Have adoption/implementation been used as explanation for missing impact from e-Government?
1	Yes, 2 No, 3 Not applicable
4	Does the paper present a definition of e-government?
1	Yes, clearly, 2 Yes, vaguely, 3 No
5	Which interaction type(s) of e-government is/are discussed?
1	Managerial, 2 Consultatory/e-Democracy, 3 Not applicable
6	What is the scope?
1	Meta, research on research, 2 Research, 3 Conceptual
7	On what level does the paper describe e-government?
1	Global, 2 National, 3 Local, 4 Domain, 5 Other
8	Where does the study/paper take place?
1	Develop countries, 2 Developing countries, country list
9	What is the object of study?
1	Infrastructure, 2 Actors, 3 Services, 4 Concepts
10	Who are the actor(s) of study?
1	Citizens, Comments, 2 Employees, 3 Managers, 4 Business, 5 Governments, 6 Supra governments, e.g. EU, 7 Researchers, 8 Others, 9 Not applicable
11	What is the time dimension of the paper?
1	Present, 2 Historical, 3 Future, 4 Other
12	How many times have the paper been cited according to Google Scholar (January 1st 2014)?
13	How many references does the paper contain?
14	What is the underlying research philosophy?
1	Positivism, 2 Murky middle, 3 Constructivism, 4 Not applicable
15	Are there any references to research philosophy?
1	Yes, 2 No
16	What is the data level?
1	Primary, 2 Secondary, 3 Tertiary, 4 Not applicable
17	Which method(s) is/are used for data collection?
1	Questionnaire, 10 No method used, 11 Other, Comments, 2 Document analysis, 3 Interview, 4 Web content evaluation, 5 Literature review, 6 Reflection on project experience, 7 Observation
18	Is there description of data collection methods?
1	Yes, 2 No, 3 Not applicable
19	Are questions, constructs etc. presented?
1	Yes, 2 No, 3 Not applicable
20	Which method(s) is/are used for data analysis?
1	Quantitative analysis, 2 Qualitative analysis, 3 Statistic modelling, 4 Descriptive analysis, 5 No method used, 6 Other, 4 Web content evaluation, 5 Literature review, 6 Reflection on project experience, 7 Observation
21	What is the time dimension of studies conducted?
1	Cross sectional, 2 Longitudinal, 3 Other, 4 Not applicable
22	Is research validity (generalization) discussed?
1	Yes, 2 No
23	What kind of recommendations are made to e-government practitioners?
1	What, 2 How, 3 No

Appendix B Most cited e-government research 2001-2010, elected scale value

Year	Paper	12	1	2	3	4	5	6	13	14	15	16	18	21	22	23
2001	Layne and Lee [32]	1481	4	4	2	1	1	2	11	1	2	1	2	1	2	1
	Silcock [41]	290	4	5	2	1	1	2	14	1	2	3	2	1	2	1,2
	Howard [25]	121	5	5	2	1	1	2	0	1	2	3	1	1	2	1
	Mecella and Batini [35]	111	3	2.5	2	3	1	2	12	1	2	1	2	1	2	1
	Wescott [48]	116	4	3.5	2	1	1	2	74	1	2	4	2	1	1	1,2
2002	Moon [36]	1131	3	4	1	1	1	2	35	1	2	2	1	1	1	1
	Warkentin et al. [46]	359	4.5	4.5	1	1	1	2	24	1	2	4	3	1	2	1,2
	Ho [23]	773	5	3.5	2	1	1	2	52	2	2	1	2	1	2	1
	Kaylor et al. [29]	256	3	4.5	2	1	1	2	14	1	2	1	1	1	1	3
	Fang [16]	295	5	5	2	1	1	2	21	1	2	4	2	1	2	1
2003	Chadwick and May [10]	440	4	1.5	2	1	1	2	73	3	2	1	2	2	2	3
	Thomas and Streib [42]	337	3	3	2	3	1	2	19	1	2	1	1	1	1	1
	Gupta and Jana [21]	294	4	2	1	3	1	2	31	2	2	1,3	1	1	2	1,2
	Jaeger and Thompson [28]	260	3	3	2	3	1	1	22	2	2	4	3	1	2	1
	Jaeger [27]	255	4	4	2	1	1	2	46	1	2	4	3	1	2	1
2004	West [49]	687	4	3	2	1	1	2	24	1	2	1,2	1	2	1	1,2
	Ndou [37]	308	5	5	2	1	1	2	44	2	2	1	2	1	2	1,2
	Gilbert et al. [19]	243	3.5	3	2	3	1	2	46	1	2	1	1	1	1	1,2
	Reddick [39]	207	4.5	4.5	2	1	1	2	49	1	2	2	1	1	1	3
	Basu [4]	222	4	4	2	1	1	2	41	1	2	3	2	1	2	1,2
2005	Norris and Moon [38]	344	3.5	5	2	1	1	2	55	1	2	2	1	2	1	3
	Carter and Bélanger [8]	685	4	4.5	1	1	1	2	44	1	2	1	1	1	1	1,2
	Gil-Garcia and Pardo [18]	333	5	5	2	1	1	2	84	2	2	1	1	1	1	1,2
	Welch [47]	323	4	3	2	3	1	2	29	1	2	2	1	1	1	3
	Ebrahim and Irani [14]	262	5	4.5	2	3	1	2	67	1	2	3	2	1	2	3
2006	Tolbert and Mossberger [43]	288	4.5	4	1	1	1	2	80	1	2	2	1	1	1	1
	Andersen and Henriksen [3]	294	3	2.5	2	2	1	2	32	2	2	1	2	1	2	3
	Hung et al. [26]	223	3.5	3	1	3	1	2	52	1	2	1,3	1	1	1	1,2
	Dada [13]	158	2	2.5	2	1	1	2	28	3	1	3	2	4	2	1
	Evans and Yen [15]	151	4	4.5	2	1	1	2	42	1	2	2,3	2	1	2	3
2007	Heeks and Bailur [22]	420	3	2.5	2	3	3	1	35	2	1	1	1	1	1	3
	Yildiz [50]	382	3.5	2	2	1	1	1	83	2	1	1	2	1	2	3
	Horst et al. [24]	177	3	3	2	3	3	2	18	1	2	1	1	1	2	3
	Guijarro [20]	150	3	3	2	3	1	2	28	1	2	1	2	1	2	1
	Kumar et al. [31]	153	5	5	2	1	1	2	79	1	2	2	2	1	2	3
2008	Coursey and Norris [12]	228	3.5	3	1	1	1	1,2	24	1	2	2	1	1	1	3
	Bélanger and Carter [5]	288	4	3	1	3	1	2	62	1	2	1	1	1	2	1,2
	Carter and Weerakkody [9]	145	4.5	4.5	2	3	1	2	60	1	2	1	1	1	1	1,2
	Tolbert et al. [44]	92	4	2	2	1	1	2	92	1	2	1,2,3	1	2	1	3
	AlAwadhi and Morris [1]	123	4	2	2	1	1	2	40	1	2	1	1	1	2	1
2009	Verdegem and Verleye [45]	153	4	4	1	1	1	2	92	1	2	1	1	1	1	1
	Schuppan [40]	110	3	2	2	3	2	2	54	3	2	1	1	1	1	1
	Kim et al. [30]	103	4	2.5	2	1	1	2	53	3	1	1	1	1	1	1
	Bélanger and Carter [6]	72	4	3.5	2	3	1	2	12	1	2	1	1	1	1	1,2
	Lean et al. [33]	89	4.5	4.5	2	1	1	2	79	1	2	1	1	1	2	1,2
2010	Bertot et al. [7]	231	3.5	3	2	3	1	2	111	2	2	4	2	1	2	1
	Gauld et al. [17]	59	4	2.5	1	3	1	2	56	1	2	1	1	1	1	1
	Cordella and Iannacci [11]	64	3.5	1	2	3	1	2	90	3	1	1	1	1	1	3
	Lee [34]	50	4	3.5	2	1	1	2	39	1	2	3	1	1	2	1
	Almarabeh and AbuAli [2]	53	5	5	2	1	1	2	18	1	2	3	2	1	2	1,2

Paper #2. “Channel Choice: A Literature review”.

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Channel Choice: A Literature Review

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Abstract. The channel choice branch of e-government studies citizens' and businesses' choice of channels for interacting with government, and how government organizations can integrate channels and migrate users towards the most cost-efficient channels. In spite of the valuable contributions offered no systematic overview exist of channel choice. We present a literature review of channel choice studies in government to citizen context identifying authors, countries, methods, concepts, units of analysis, and theories, and offer suggestions for future studies.

Keywords: channel choice, e-government, integrated service delivery, literature review, multichannel, multi-channel

1 Introduction

Although the digitization of the public sector has taken place for decades [1] there is still a gap between the availability and uptake of online public services [2]. Even in the countries which are front runners in terms of citizens' adoption of electronic public services citizens keep using traditional channels in addition to online channels either as a supplement or as primary channels [3], [4]. The continued use of traditional channels where the interaction takes place between individual citizens and government employees is costly compared to interaction through a website or other forms of self-service applications.

Several literature reviews within e-government have presented and synthesized the findings of studies of citizens' adoption of online services [5]–[7]. However, these studies tend to focus on citizens' intention to adopt an individual e-government service in isolation [7]. The channel choice (CC) literature studies citizens' choice of channels, and the interplay that takes place between citizens' use of channels for interacting with public authorities [8]. In spite of the valuable contributions the CC literature offers, no systematic review of the CC literature exists.

To cover this gap we present a literature review of the CC field in e-government. Our review analyzes 36 papers which study government to citizen interaction (G2C) through more than one type of channel. We combine and expand Webster & Watson's [9] and Schlichter and Kræmmergaard's [10] methods for finding, classifying and analyzing papers.

1.1 Scope of review

Webster & Watson [9, p. xv] recommend that only one level of analysis is included in a literature review unless there is a strong rationale to include several levels. However, the studies within the CC field take place at several levels; insights from the analysis of how citizens choose channels for interaction with public authorities are used to make recommendations to these organizations on how to manage their channels. Due to this connection in the literature we include both levels in our review.

In the CC literature the terms channel or service channel are used to describe the various forms of communication available to citizens to interact with public authorities [11]. Reddick and Anthopolous [4, pp. 400-401] divide these channels into three types: traditional channels (face-to-face, telephone conversations and physical letters), e-government channels (web and e-mail) and new digital media (text messaging, social media and mobile apps). To focus our review, we only include papers which study at least two of these channel types. Further, only papers which study CC in a government to citizen context (G2C) are included. Results from studies of employees' CC may not be transferrable to citizens, as businesses' policies, structures and means of communication can affect employees' behavior. We want to study the managerial aspects of CC in e-government [1], and papers focusing on CC in relation to e-democracy or e-participation are omitted. Finally, due to the rapid technological development of online services, only papers published within the last decade (2005-2014) are included.

The papers are classified according to authors, country and methods based on a framework by Schlichter and Kræmmergaard [10]. Previous literature reviews of the e-government field have criticized scholars for not leaving their offices to collect data, for conducting cross-sectional rather than longitudinal studies, and for not studying what happens inside government organizations [12]–[14]. To find out if this criticism is applicable to the CC literature we expand the method classification to include researchers' involvement in the data collection process, the use of longitudinal studies, and practitioners' involvement in the studies. As our topic is CC we also examine if the papers include data on channel traffic. For analyzing the papers we apply Webster and Watson's [9] conceptual analysis matrix identifying objects and level of analysis, conceptual models, and the theoretical frameworks used.

The next section present the methods used to find and analyze the papers in our review. In the third section we present a classification of the papers found, while section four presents the analysis of the papers. In section five we discuss the results with the aim of identifying gaps in the CC literature for future studies. Section six contains concluding remarks and limitations.

2 Method

The method section is divided into three parts. First we present the search for papers. We then present Schlichter and Kræmmergaard's [10] framework for the classification and Webster and Watson's [9] method for the concept-centric analysis.

2.1 The search for papers

The papers were found in a three step process following Webster & Watson [9].

1. Search for papers in selected journals and conference proceedings
2. Database search
3. Backwards and forwards searches

We began our search for papers in selected journals recognized as core e-government journals by scholars [15] and in the proceedings of EGOV. The first round of searches was conducted in January 2015 using keywords found through an iterative process. An initial series of keywords were supplemented as papers with new keywords were found. Further, inspired by Hofmann et al. [7] we contacted eight experts within the CC field for additional keywords, of which five replied. 13 keywords were used; *CRM, channel behavior, channel choice, channel ict architecture, channel integration, channel management, channel marketing, channel strategy, customer relationship management, integrated service delivery, multichannel, multi-channel and orchestrating service delivery.*

The keyword search included titles, abstracts, and keywords. After removing duplicates we ended with 239 papers. Papers were included if they focused on CC in a G2C context, included at least two types of channels, were published no later than 2005, and written in English. After reading the abstracts 212 papers were omitted as they only studied one type of channel or were outside the G2C domain. This left 27 papers of which two were omitted as they were inaccessible from the university libraries we had access to. After reading the remaining 25 papers 17 were included in the review.

Webster & Watson recommend that a database search is conducted as the second step to find additional papers. Following the recommendation of an expert in the field, we used the E-government Reference Library (EGRL). We downloaded EGRL version 10.0 (July 2014) to Mendeley Reference Manager for Windows (version 1.13.3) and conducted keyword searches in titles, abstracts and keywords using the 13 keywords. 56 papers were found of which 31 had been found in step 1, two were inaccessible, and one was written in Dutch. This excluded 34, leaving us with 22 papers. After reading these four papers were added to the pool bringing the total to 21.

The third step consisted of using Google Scholar to find papers that either referenced or were referenced to by the 21 papers. 68 papers were found which initially seemed relevant according to our selection criteria. We omitted four conference papers which were earlier editions of journal papers already found. Four papers were unavailable. After reading either the abstracts or the whole papers we were left with 15 relevant papers. These 15 papers were added to the final pool, bringing the total to 36. Appendix A presents an overview of the 36 papers.

2.3 Classification of papers.

For the analysis and coding we created a one page template for each paper which contained bibliographical information, abstracts, coding results and notes. This data was entered into a spreadsheet (MS Excel) and analyzed at an aggregated level. The classification of methods follow the framework by Schlichter and Kræmmergaard

which they developed for a literature review of the enterprise resource planning field [10]. We removed one method category, archival, as it overlapped with other categories in the papers found. Table 1 presents the classification.

Table 1. Classification of methods

Category	Description
Case study	Papers reporting on studies involved with a single site or a few sites over a certain period of time
Combined	Papers which do not rely on one primary method
Descriptive	Papers solely describing or arguing for a phenomenon and often very practically oriented
Design science	Papers that construct systems and/or tools
Field experiment	Papers which conduct field experiments
Theoretical	Papers analyzing existing theory, typically with the aim of developing new theory
Survey	Papers that gather data by means of questionnaires

Researchers' involvement in data collection (Table 2) was coded following Blaikie [16, p. 161]. Longitudinal studies followed Blaikie's definition 'a study extended in time' [16, p.201]. Practioners' involvement was coded if the authors had direct contact with government organizations' employees through workshops, interviews, surveys etc. Channel traffic was coded if it was presented in numerical form.

Table 2. Types of data

Category	Description
Primary	Data generated by the researcher
Secondary	Data generated by another researcher
Tertiary	Data analyzed by another researcher

2.4 Concept-centric analysis of the papers

To synthesize the CC literature we conducted a concept-centric analysis following Webster and Watson [9]. As we read the papers we created a template with the primary concepts covered, and the units of analysis. A pattern quickly emerged; part of the papers studies factors impacting CC at the individual level, while another part studies processes related to multichannel management (MCM) at the organizational level. Webster and Watson state that the conceptual analysis should be supplemented with information on the variables examined, and a conceptual and theoretical analysis of how and why the variables are related [9]. We therefore coded factors, processes and theories applied as well.

3 Classification of the CC literature

In this section we present the classification of the papers according to authors, countries and methods applied. We also discuss practitioners' involvement and the use of channel traffic in the papers.

3.1 Authors and country

Table 3 presents an overview of the most prolific authors, while Table 4 presents the papers according to first author's country.

Table 3. Most productive authors within CC literature

Author	Papers
Pieterse, W.	11
Reddick, C.G.	6
Janssen, M.	4
Teerling, M.L. (with Pieterse)	4
Ebbers, W.E. (with Pieterse)	3
Kernaghan, K	3
Klievink, B. (with Janssen)	3

The majority of the papers were written by a small group of authors from only a few countries. Three scholars have authored or co-authored 21 of the 36 papers.

Table 4. First author's country

Country	Papers in pool
The Netherlands	14
US	10
Canada	5
Germany	2
Belgium	1
India	1
Italy	1
South Korea	1
UK	1
Total	36

The papers in the pool are written by first authors from nine different countries. Authors from The Netherlands have published 40 percent of the papers and authors from the Netherlands, US and Canada have published 29 of the 36 papers.

3.2 Methodology

Table 5 presents the papers according to the primary method applied. Four papers are labeled as ‘combined’ as they rely on several methods.

Table 5. Papers classified according to primary method

Category	Number of papers	Papers
Case study	12	[17]–[28]
Combined	4	[29]–[32]
Descriptive	2	[33], [34]
Design	1	[35]
Field experiment	2	[36], [37]
Theoretical	4	[3], [11], [38], [39]
Survey	11	[4], [8], [40]–[48]

Case studies and surveys are the most frequently applied methods. Eighteen papers include results from surveys, but only eleven use surveys as a primary method; ten study the factors that influence citizens’ choice of channels and one studies the adoption of multiple channels in organizations. Twelve papers present individual or multiple case studies, based on documentary material and interviews, workshops or other forms of collaborations with practitioners. Four papers develop theory, and focus mainly on exploring and explaining government organizations’ strategies for multichannel management through various theoretical lenses. One paper presents a role-playing game as a method for involving case-workers multichannel management, and the results from applying this method in practice. None of the 16 of the papers which apply qualitative methods relies on one method. Rather, interviews or focus groups discussions are combined or conducted preliminary to a survey.

Table 6. Level of data

Level of data	Number of papers	Paper
Primary	22	[17], [19]–[30], [32], [35]–[37], [40], [42], [46], [48]
Secondary	7	[4], [8], [41], [43]–[45], [47]
Tertiary	6	[11], [18], [33], [34], [38], [39]
No data	1	[3]

Table 6 presents the highest level of data in the papers according to researchers’ involvement. Primary data has been collected for 22 of the 36 papers. Secondary data is used in seven papers which use survey results on individuals’ CC and channel satisfaction for statistical modeling. Six papers present only tertiary data, while one paper does not present any data. Times series are used frequently, but only one paper presents a longitudinal study, with six months between data collection points.

There is a high level of practitioner involvement in the papers, largely due to the many case studies based on interviews with employees. Of the 36 papers, 21 include

involvement or collaboration with practitioners. The authors' biographies reveal that four authors behind three of the papers [18], [19], [34] have worked in government organizations, in three cases at the top level.

Seven papers presents channel traffic, of which three presents the same data [11], [38], [40]. Three papers contain a single table or paragraph with channel traffic [8], [19], [23]. Finally one paper analyzes channel data as a part of a field experiment conducted in 2008 [37]. This data only concerns transactions; however, information inquiries related to the transactions are not presented. Further, except for the field experiment, the latest data on channel traffic is from 2006.

4 Concept-centric analysis of the CC literature

This section present the concept-centric analysis of the pool of papers following Webster and Watson [9]. During coding we focused on the two overall concepts in the papers; CC which focuses on the factors that influence citizens' choice of channel and MCM which focuses on the processes and issues related government organizations management of multiple channels. Table 7 presents the result of this analysis.

Table 7. Concept-centric analysis of papers

Papers	Concepts					
	Channel choice			Multichannel management		
	Unit of Analysis			Unit of Analysis		
	O	G	I	O	G	I
[41] [32] [40] [42] [29] [44] [17] [48] [47] [8] [31] [45] [46] [4]			•			
[18]–[25], [27], [28], [33], [34], [39], [43]				•		
[3], [26], [30], [36]–[38]			•	•		
[35]					•	
[11]*						

Legend: O = organization, G = group, I = individual, * = service channel

Of the 36 papers 14 study CC at the individual level, while 14 study MCM at the organizational level. There are six papers which overlap these levels, of which two presents the results of field experiments and three are theoretical. One paper, presenting the results of a MCM design study takes place at the group level. One paper [11] does not fit into either level, but focuses on the channels and services delivered, and the development of channel traffic over time. None of the papers study CC at the group level, although a few briefly mention that citizens can also influence each other, or ask each other for help in dealings with public authorities.

4.1 Studies at the individual level

Of the 19 papers which study citizens' CC for interaction with public authorities three are theoretical and 11 use survey data either for descriptive analysis and/or to test the factors that influence this choice. Four papers explore the factors through qualitative methods, two of which also use surveys. Three papers study the effects of organizations' instruments for channel integration and migration, and how these instruments are perceived by citizens. These studies are noteworthy as they cross the boundaries between the individual and organizational unit of analysis.

Most of the studies at the individual level apply variance models to test the impact of independent variables on citizen channel and/or source choice. Nine study citizens' satisfaction with a channel and/or interaction. Satisfaction is both studied as a dependent variable, based on channel chosen, and as an independent variable, where satisfaction with a previous encounter influence future interactions. The factors influencing channel choice have been found through qualitative studies, informed by previous studies, adoptions studies such as TAM [49], marketing theory, and theoretical frameworks from media and communication theory especially Media Richness Theory (MRT) [50], Channel Expansion Theory [51] and Uses and Gratifications research [52]. The papers test a number of different factors. To provide a simple overview we clustered the independent variables into four groups during coding. Note that satisfaction was studied both as an independent and dependent variable. Table 6 presents the factors studied, and the papers which study them.

Table 6. Factors related to citizens' channel choice

Variable	Examples of indicators	Theory	Papers
Channel characteristics	Multiple cues Level of interactivity Perceived ease of use Perceived usefulness	Media richness theory, marketing theory, technology adoption models	[3], [17], [26], [30], [32], [36], [38], [42], [45], [48]
Task characteristics	Type of task at hand Complexity of problem Ambiguity of information	Media richness theory, uses and gratifications research	[3], [4], [8], [17], [26], [29], [32], [38], [40]–[42], [44], [45], [48]
Personal characteristics	Socio-demographics (age, gender, race, education, income) Experience with channel, habits Trust in public authorities	Digital divide literature, technology adoption models, channel expansion theory,	[3], [4], [8], [29], [31], [32], [38], [40]–[42], [44]–[48]

Situational constraints	Availability of channels Price Distance to channels	Marketing theory,	[3], [26], [29], [32], [38], [40], [41], [47], [48]
Satisfaction	Satisfaction with channel Satisfaction with service encounter Satisfaction with previous encounters	Channel expansion theory, marketing theory,	[4], [8], [29]–[31], [36], [37], [41], [45]

An alternative to the variance models is presented by Teerling and Pieterse [30] who use a process model to illustrate how governments' marketing efforts and a person's previous experiences also influence channel choice. This model is interesting as it acknowledges that channel choice is not just a psychological process taking place within citizens, but also a social process where citizens can be influenced by external factors. This is important as government organizations can then impact citizens' CC before an interaction takes place.

4.2 Studies at the organizational level

Table 7. Concepts analyzed at the organizational level

Concept	Theory	Papers
Channel strategies	Media theory, technology adoption models	[3], [11], [38], [39]
Channel integration and/or migration	Media theory, technology adoption models	[24], [26], [27], [33], [34], [36], [37]
Inter- and cross-organizational cooperation, integrated service delivery	References e-government and e-commerce literature and institutional theory but no explicit theoretical framework	[18], [21], [23], [25], [28], [35]
Intermediaries	Intermediation theory, marketing theory, transaction cost theory,	[19], [20]
Other (various)	Technology adoption models	[22], [43]

The 21 papers which take place at the organizational level are much more diverse in terms of topics studied than those at the individual level. Channel integration and migration are the most frequently studied topics, followed by inter- and cross organizational cooperation related to MCM. Due to the limits of this review we only briefly cover the topics here.

Pieterse's studies of government organizations' channel positioning strategies stand out as they are presented in four papers [3], [36], [38], [39]. He uses a process model to illustrate how public authorities can migrate citizens towards the most efficient channels to reduce administrative costs and increase citizen satisfaction. The

studies are informed through theories from media science such as MRT, Bordewijk and van Kaam's [53] classification of tele-information services, a historical analysis of government organizations' channel strategies, and through a series of field experiments from the Dutch Channels in Balance project [24], [30], [36].

Kernaghan discusses the different types of MCM collaboration between government organizations and presents two models to visualize these variations. The first describes inter- and cross organizational partnerships, in terms of actors, services and channels involved [21]. The second model describes the degree to which organizations involved in MCM can be integrated, from informal cooperation, where they share information, to full consolidation, where they give up individual goals and policies and become fully harmonized [33]. This is reminiscent of the vertical and horizontal integration of government organizations which is frequently studied in e-government literature, such as Layne & Lee's [54] often cited e-government web-stage model. Kernaghan differs from Layne and Lee, however, in that he does not present consolidation as an inevitable last stage, but rather as one of several strategic options to consider depending on one's needs and resources. In this way Kernaghan avoids the technologic determinism which the web-stage models have been criticized for. Kernaghan's studies are mostly informed through case studies, especially from Service Canada, rather than any explicit theoretical framework.

Klievink and Janssen [25] categorize challenges related to MCM coordination based on a literature review from several fields including e-commerce and e-government. They identify three layers which cover the political, organizational, and information and technological aspects to MCM coordination and present these in an analytical framework. Kernaghan and Flumian discuss similar barriers [18], [21] with a stronger emphasis on problems caused by changing political climates and power struggles.

In another study Klievink and Janssen focus on public and private intermediaries [20]. Based on case studies and transaction cost theory they discuss the positive roles intermediaries play in facilitating government to citizen interaction, and the strategies government organizations can employ in relation to them in the shape of a process model. Another perspective on intermediaries comes from Frey and Holden [19] who study the channel conflicts that can arise when private companies appear as intermediaries. The authors apply the theoretical concept of distribution channel management from marketing literature and two case studies to illustrate how government organizations can handle these conflicts. Like Janssen & Klievink they acknowledge the positive role intermediaries can play in MCM. However, Frey and Holden note the importance of protecting the interests of the private companies in addition to those of the government and citizens, while Janssen & Klievink are more concerned with ensuring that citizens have equal access to government services.

5 Discussion

In this section we discuss the results of our literature review with the aim of identifying methodological and knowledge gaps in the CC literature. Table 8 presents six areas for future CC studies, which could bring the field further forwards.

Table 8. Suggestions for future CC studies

Suggestion	Purpose
Studies from new countries and services	Increase analytical generalizability
More use of primary data and qualitative data	Improve statistical analysis of CC, and in-depth examination of specific areas
Direct observation and analysis of channel traffic	Supplement and update existing studies
Longitudinal studies	Analyze long-term effects of MCM instruments
Studies of CC at group level	Extend existing process models to include the effects of citizen-to-citizen interaction on CC
Field experiments	Bridge gaps between CC at individual level and MCM at organizational level

The CC literature is dominated by a few authors and countries. Many of the papers study actual use and involve practitioners. This limits the places where the studies could have been carried out, as well as their generalizability. Studies from other countries and of specific services could offer valuable contributions to the literature.

Many methods are used to collect and analyze data, but two types of studies stand out; statistical analysis of survey data of citizens' CC, and case studies of MCM at the organizational level. The studies of CC appear more harmonized and coherent than those of MCM. Part of this may be because they are carried out by a small group of authors who cross-reference each other. However, these studies also revolve around one topic – individual's CC – use similar variance models and explicitly refer to the same theoretical frameworks to inform their analyses. There is a strong sense of progress and building on each other's work, and both empirical and theoretical contributions are offered. However, they are largely based on survey data from secondary data sets which the researcher cannot influence. Although a few studies use qualitative studies to inform the survey creation, CC scholars repeatedly state a need for supplementing surveys through qualitative methods [3], [4], [8], [40], [41], [47].

Methods of direct observation are time consuming to conduct, but they provide valuable contextual information [16] and could inform areas which have only been slightly touched upon; situational constraints, habits and how the service in question and its importance to the citizens influence CC. Observations could study an entire service encounter from the citizens' point of view and the interplay that takes place between channels during such an encounter. This would enable CC scholars to explore citizen initiated requests and explain why these requests occur and gain insight into channel switching and supplementing behavior.

Data on channel traffic could update and supplement the existing knowledge on MCM. Longitudinal studies of channel traffic could be used to evaluate the effects of MCM instruments on citizens' channel behavior. Most of the existing analyses of channel traffic are based on data which is a decade old, and it is unknown if the conclusions based on this data still hold up today.

Future CC studies could examine how citizens influence and help each other when interacting with government organizations. It is striking that the papers in this review

focus at only the individual or organization level. There are no studies of CC at the group level, although both private and public intermediaries are mentioned at organizational level, and several studies mention that friends and family members can be intermediaries [25], [32], [44]. Teerling & Pieterse's process model seems suitable for this task as it illustrates external parties' influence on citizens' CC [30].

A series of conceptual models have been presented to illustrate channel integration and migration, inter-and cross organizational collaboration and barriers to MCM. However, most of the authors seem to either build new models or improve their own. Having presented some of the overlaps in the MCM studies at organizational level here, we would suggest that the existing conceptual models are criticized, tested or synthesized before new models are created. This could lead to a more mature and coherent field. We also recommend that theoretical frameworks are used to inform these models to a higher extent.

Finally we recommend that new field experiments are conducted to study the effects of MCM instruments. The existing studies have been valuable to bridge the individual and organizational levels, but they have been carried out in one country by a small group of scholars. New experiments could contribute by including new service areas, target groups, and MCM instruments. Further they could examine the effects of MCM on all available channels, rather than a few isolated channels. Field experiments could also to examine the effects of MCM instruments on new digital media, which previous experiments have not covered.

6 Conclusion

This paper has presented an overview of 36 papers from the CC literature found and analyzed following Webster and Watson (2002). The classification of the papers expanded a framework by Schlichter and Kræmmergaard (2010). The importance of supplementing the search for papers with forwards and backwards searches has been demonstrated as new papers were added in each step. Hofmann's method of contacting authors to inquire about keywords proved fruitful [7]. Our analysis has revealed multiple gaps in the CC literature. We have suggested six areas which future studies could address to contribute to the theoretical and empirical development of the CC field.

There are several limitations to our study. Many of the papers were found due to authors citing themselves. This self-citing means the pool of papers revolve around a few authors and countries. The effect may have been strengthened by the sources searched, keywords used, and the fact that papers from certain publishers were inaccessible. It is possible that we may have missed papers for these reasons. Our conceptual analysis is limited to two main areas due to author resources and spatial limitations. A synthesis of results, recommendations for practitioners, and a more in-depth discussion of suggestion for future studies were omitted for similar reasons.

Future literature studies could address these limitations by expanding the search, classification and analysis conducted here. An analysis of author keywords, citations, sources and disciplines could illuminate the relationships between the papers and to other fields. Future studies could synthesize and discuss results, suggestions for future studies and recommendations for practitioners. We welcome input from scholars on these issues and will gladly share our data for further analysis upon request.

Appendix A. Pool of papers in the review

ID	Author(s) and year	Source	Country
19	Frey, K. N., & Holden, S. H. (2005)	GIQ	US
21	Kernaghan, K. (2005)	IRAS	Canada
41	Reddick, C. G. (2005)	JEG	US
39	Pieterse, W., & Dijk, J. (2006)	IFIP EGOV Conference	Netherlands
11	van Deursen, A., & Pieterse, W. (2006)	ICA Conference	Netherlands
18	Flumian, M., Coe, A., & Kernaghan, K. (2007)	IRAS	Canada
32	Pieterse, W., & van Dijk, J. (2007)	Dg.o. Conference	Netherlands
38	Ebbers, W. E., Pieterse, W. J., & Noordman, H. N. (2008)	GIQ	Netherlands
40	Pieterse, W., & Ebbers, W. (2008)	IRAS	Netherlands
42	Pieterse, W., Teerling, M., & Ebbers, W. (2008)	IFIP EGOV Conference	Netherlands
34	Singh, A. K., & Sahu, R. (2008)	GIQ	India
29	Verdegem, P., & Hautekeete, L. (2008)	IJEG	Belgium
20	Janssen, M., & Klievink, B. (2009)	IJEGR	Netherlands
36	Pieterse, W., & Teerling, M. (2009)	IFIP EGOV Conference	Netherlands
43	Reddick, C. G. (2009)	GIQ	US
23	Roy, J. (2009)	IJEG	Canada
35	Bharosa, N., Janssen, M., Klievink, B., van Veenstra, A., & Overbeek, S. (2010)	EJEG	Netherlands
28	Gagnon, Y. C., Posada, E., Bourgault, M., & Naud, A. (2010)	IJPA	Canada
25	Klievink, B., & Janssen, M. (2010)	Dg.o. Conference	Netherlands
26	Mundy, D., Umer, Q., & Foster, A. (2011)	EJEG	UK
3	Pieterse, W. (2010)	IJEGR	US
44	Reddick, C. G. (2010)	IJEGR	US
37	Teerling, M. L., & Pieterse, W. (2010)	GIQ	Netherlands
17	Barth, M., & Veit, D. (2011)	HICSS Conference	Germany
30	Teerling, M. L., & Pieterse, W. (2011)	IP	Netherlands
24	Van De Wijngaert, L., Pieterse, W., & Teerling, M. L. (2011)	IJIM	Netherlands
27	van Veenstra, A. F., & Janssen, M. (2010)	EJEG	Netherlands
48	Lee, J., & Rao, H. R. (2012)	ISJ	US
47	Reddick, C. G., Abdelsalam, H. M., & Elkadi, H. A. (2012)	ITD	US
8	Reddick, C. G., & Turner, M. (2012)	GIQ	US
33	Kernaghan, K. (2013)	CPA	Canada
45	Pang, M. S., Mithas, S., & Lucas, H. (2013)	ICIS Conference	US
46	Plattfaut, R., Kohlborn, T., Hofmann, S., Beverungen, D., Niehaves, B., Rackers, M., & Becker, J. (2013)	HICSS Conference	Germany
31	Lamberti, L., Benedetti, M., & Chen, S. (2014)	GIQ	Italy
22	Nam, T., & Pardo, T. A. (2014)	GIQ	South Korea
4	Reddick, C., & Anthopoulos, L. (2014)	TGPPP	US

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Paper #3. *“The Efficiency of freedom: Single parents’ domestication of mandatory e-government channels”.*

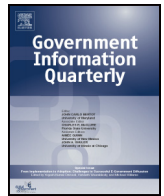
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The efficiency of freedom: Single parents' domestication of mandatory e-government channels

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ABSTRACT

The Danish e-government strategy aims to increase the efficiency of public sector administration by making e-government channels mandatory for citizens by 2015. Although Danish citizens have adopted e-government channels to interact with public authorities, many also keep using traditional channels. Previous studies have analyzed citizens' channel choice in non-mandatory settings, and mostly surrounding a single isolated channel. To cover these gaps we present a mixed method study of citizens' actual use of e-government channels using domestication theory as our framework. Our findings indicate that e-government and traditional channels are often used simultaneously, and citizens' perceptions and previous histories with public authorities influence channel choice. Further, citizens' existing routines related to third-party non-official channels also influence their interaction with public authorities. Moreover, we find a series of unmet needs which leads to information requests on traditional channels concerning online transactions. Based on the study we offer recommendations to practitioners to increase the use of e-government channels and reduce traffic on traditional channels.

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1. Introduction

The Danish e-government strategy has made government to citizen (G2C) interaction through e-government channels, such as websites and online self-service applications, mandatory by 2015 (The Danish Government, Danish Regions, & Local Government Denmark, 2011). The strategy aims to increase the efficiency of public sector administration by increasing citizens' use of e-government channels and reducing interaction through traditional channels. A new public authority, Udbetaling Danmark (UDK), was established in 2012 to achieve savings in the administration of public benefits through centralization and digitization. Interaction between citizens and UDK primarily takes place through the portal borger.dk (citizen.dk) and digital post, a public e-mail system, which replaces physical letters. The online system NemID handles identification. For personal assistance, citizens can call UDK or turn up at the municipalities' local service centers.

E-government studies have shown that supplying e-government channels does not ensure that citizens adopt them (Coursey & Norris, 2008), and that e-government channels tend to supplement rather than substitute for traditional channels (Pieterse, 2010; Reddick & Anthopoulos, 2014). These findings are similar to recent experiences from Denmark. In spite of having the highest e-government adoption

rate in the EU, and e-government channels becoming mandatory, the Danes still use the telephone and counter turn-ups for G2C interaction (Kommunernes Landsforening, 2014; Statistics Denmark, 2014).

1.1. Purpose and research question

The research questions we seek to answer are:

- How do citizens actually use mandatory e-government channels?
- How can studies of citizens' actual use contribute to improving e-government channels and reduce the need for traditional channels?

By addressing these research questions and studying citizens' actual use of mandatory e-government channels we contribute to the CC field of e-government and fill existing gaps therein. Moreover, we respond to calls for qualitative studies on CC (Pieterse, 2010; Reddick & Anthopoulos, 2014). Finally, we offer specific recommendations based on actual use thereby accommodating criticism of the e-government field (Heeks & Bailur, 2007; Madsen, Berger, & Phythian, 2014).

We conduct a case study applying domestication theory as a theoretical lens. According to domestication theory people are not just passive adopters, but active subjects, who redefine technology to their own needs as they incorporate it into their everyday life (Silverstone & Hirsch, 1992, p. 16). Thus, domestication involves mutual processes, where technology shapes and is shaped by people's practices and

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values. This framework seems fitting for studying the actual use of mandatory technology, and when seeking insight into how and why this use deviates from the official requirements.

Our study revolves around family benefits, which a specific section of UDK manages. 'Family benefits' is an umbrella term for multiple benefits which parents with children under the age of 18 are legally entitled to. All parents are signed up for basic child benefits automatically. Single parents are entitled to special benefits as long as they do not live with other adults under marriage-like conditions. To retain the benefits single parents annually need to inform UDK that they are still single using an online self-service application. Single parents may also be eligible for additional benefits managed by different sections of UDK and other authorities. According to official statistics, Danish single parents have high access to ICTs, and are skilled and frequent users of online services, including e-government (Statistics Denmark, 2014). By focusing on them, we gain insight into a highly competent groups' actual use of e-government services, and post-adoption processes related to e-government. Most e-government adoption and CC studies have taken place in settings where citizens have a free choice of channels, our study takes place in a mandatory setting, which adds to its novelty and contribution.

The next section presents e-government adoption and CC studies and identifies gaps herein. Section three presents domestication theory as the theoretical lens guiding our study while section four presents our methodology. Sections five and six present and discuss results. Finally, section seven presents concluding remarks, limitations and implications for further research.

2. Previous studies of citizens' adoption of e-government channels

In a literature review, Hofmann, Räckers, and Becker (2012) identify two perspectives in studies of citizens' acceptance of e-government services. The first is grounded psychological theories seeking to predict human behavior and applies adoption models such as the Technology Adoption Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003), while the second is based on Diffusions of Innovations theory (Rogers, 2003). Both perspectives use variance models to test 'independent variables that cause variation in dependent variables' (Webster & Watson, 2002, p. xix). The independent variables known to influence the intention to use a new technology are citizens' perception of the e-government service; especially how easy to use and useful the technology appears to be, demographic variables such as age, gender, and education, facilitating conditions (help offered), and finally social influence (pressure to use the technology). E-government scholars have included additional variables beyond those known from the technology adoption literature. Bélanger and Carter (2008, Carter & Bélanger, 2005) have found that citizens' trust in public authorities also influences the willingness to use e-government channels.

Hofmann et al. (2012) and Madsen et al. (2014) criticize the adoption studies for focusing on citizens' intention to use generic e-government services, rather than their actual use of real services, and of ignoring specificities of the services in question. This limits the researchers' ability to offer practical recommendations. Moreover, the studies limit citizens' actions to either adoption or non-adoption of a single channel. Variation in use, citizens' inventions of new ways of using e-government services, and the interplay that can occur across channels are ignored (Madsen et al., 2014).

CC studies in e-government analyze citizens' and businesses choice of channels for interacting with public authorities. Madsen et al. (2015) conducted a literature review of 36 papers on CC and multichannel management for G2C interaction. Of these, 19 studied CC at the level of the individual citizen, mostly through quantitative methods and statistical modeling of survey data. These studies are informed by TAM, marketing theory, and frameworks from media and communication theory, especially Media Richness Theory (Daft & Lengel, 1986), Channel

Expansion Theory (Carlson & Zmud, 1999), and Uses and Gratifications research (Katz, Blumler, & Gurevitch, 1973). Like the e-government adoption studies, many CC studies use variance models. They test the impact of independent especially channel and task characteristics, demographic variables, and situational constraints on dependent variables; citizens' CC and satisfaction with the service encounter (Reddick, Abdelsalam, & Elkadi, 2012; Reddick & Anthopoulos, 2014; Reddick & Turner, 2012; Reddick, 2010). These studies show that websites are suitable when citizens need to look up information, but telephone or face-to-face conversation, which allow for direct interaction with a caseworker are preferred to handle more complicated problems. Results also indicate that channel characteristics are not fixed properties, but citizens' experiences with channels influence the perception of them and the willingness to use these channels again (Pieterse & Ebbers, 2008; Pieterse, Teerling, & Ebbers, 2008; Teerling & Pieterse, 2011).

By conducting group interviews Pieterse and van Dijk found that citizens are primarily guided by habits, and do not necessarily consider their options until problems arise (Pieterse & van Dijk, 2007). In a later study, Teerling and Pieterse (2010) conducted a field experiment and found that it is possible to change these habits and guide citizens to e-government channels through marketing.

In spite of these valuable contributions, several knowledge and methodological gaps remain. Few studies regard CC as a process, and many are based on analysis of secondary survey data. Such studies do not offer insight into the actual use that occurs after CC. Reddick acknowledges these limitations and calls for focus group discussions for in-depth examinations of how citizens perceive e-government services, channel switching, and CC in relation to mandatory tasks and services (Reddick & Anthopoulos, 2014; Reddick & Turner, 2012; Reddick, 2005). Pieterse and Ebbers (2008) suggest that observations and analysis of phone and desk conversations is used to gain insight, while Pieterse (2010) notes that more knowledge is needed about the actual needs, desires and behavior of citizens and the role emotions play with regards to CC. We will cover these gaps by applying domestication theory, which seeks to understand people's practices from the inside by analyzing the reasons people offer for their actions. This separates domestication theory from the e-government adoption and CC studies, which study these phenomena from the outside and seeks causal explanations through hypotheses testing and statistical modeling (Blaikie, 2012).

3. Theoretical lens: domestication theory

Domestication theory studies the processes that take place after technologies are brought into households (Berker, Hartmann, Punie, & Ward, 2005). It is used to study how people make technology their own by adapting it to their values, interests, and routines. Domestication theory was developed by combining reception analysis and social shaping of technology studies (Haddon, 2007). Domestication theory regards the meaning of technology as a dynamic phenomenon continuously created through social interaction and use in everyday life. According to domestication theory users both shape and are shaped by technology through mutual processes of negotiation between the household members, the technology, and the outside world. Following this framework the actual use or perception of the technology cannot necessarily be anticipated by designers or policymakers. For citizens to use a channel they must first create a set of practices related to it, which must be seen to fit into the citizens' everyday life and routines related to G2C interaction. The framework for analyzing the domestication process consists of four overlapping aspects as shown in Fig. 1 (Silverstone & Hirsch, 1992). *Appropriation* covers the processes of negotiation and consideration whereby the technology is brought into the household and changes from being a generic commodity to an object of significance with a certain purpose for the household members (Haddon, 2011). *Objectification* covers the physical display of the

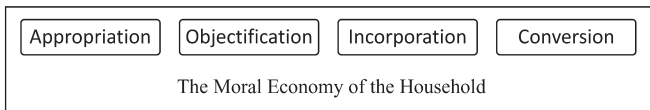


Fig. 1. The four aspects of the domestication process.

technology; its placement and the status ascribed to it as an object in the household. Through this display, the household members reveal their values to others. *Incorporation* concerns how the technology fits into the habits and routines of everyday life. This aspect is especially important in the analysis of mediated content, which does not have a spatial extension, although it is accessed through physical media in the household (Silverstone & Hirsch, 1992). *Conversion* concerns how the household members share their use of technology with others, and make claims for status related to this use. These processes take place within *the moral economy of the household*, which describes the household as an economic unit involved with transactions of goods and meaning with the outside world. The transactions 'are defined and informed by a set of cognitions, evaluations and aesthetics, that are themselves defined by the histories, biographies and politics of the household and its members.' (Silverstone & Hirsch, 1992, p. 18). Hereby the household 'create and sustain its autonomy and identity (...) as an economic, social and cultural unit.' (Silverstone & Hirsch, 1992, p. 19).

Although domestication theory has mostly been applied on physical technologies, studies have also been conducted on non-physical content such as telephone conversations and television shows (Berker et al., 2005) and within e-government for municipalities' supply of websites (Liste & Sørensen, 2015). As mediated content is rarely displayed physically, but rather through incorporation into routines, we will present the objectification and incorporation aspects together. Having presented our theoretical framework we turn to how our empirical studies were conducted.

4. Method

As domestication theory has a strong emphasis on the construction of meaning the studies are mostly conducted using qualitative methods (Haddon, 2011). Our study followed this tradition, but supplemented the qualitative methods with quantitative traffic data, to provide an overview of citizens' routines for interacting with UDK. The empirical studies covered three stages as presented in Table 1.

The first author spent one week collecting data at UDK's family benefit call center. The purpose was to discover patterns and themes to be explored through in-depth studies. The focus group discussions were recorded on video and conducted using open-ended questions and exercises revolving around participants' history with the family benefits system, practices for interacting with UDK, and suggestions for improvement. Upon arrival the participants were briefed on the purpose of the project, that their statements would be presented in

Table 1 Empirical studies.

Stage	Method	Time frame
1. Data collection in UDK call center	<ul style="list-style-type: none"> • Co-listening to calls • Informal talk with caseworkers • Statistics on calls and website visits 	April 2013
2. Focus group discussions	<ul style="list-style-type: none"> • Five focus group discussions with 28 single parents 	April–May 2013
3. Follow-up interviews	<ul style="list-style-type: none"> • Semi-structured interviews with 9 single parents from focus groups • Observations of single parents using e-government channels 	December 2013–June 2014

text form only, and that they would remain anonymous in any published studies (Krueger, 1994; Kvale, 1994).

A recruitment company was used to find single parent benefit recipients for the studies. They received a small gift for participating. We conducted focus groups discussions as this allowed us to simulate social processes and gain insight into how perceptions of UDK and G2C interaction are shared and shaped. This method can stimulate conversation around sensitive topics and allow researchers to ask follow-up questions (Colucci, 2007; Krueger, 1994). Moreover, they provided a means for skilled ICT-users to present their own explanations of their interaction with public authorities, and discuss the underlying perceptions of both channels and public authorities, which informed their actions with other people in similar situations. Finally, they were a means to establish a rapport with our participants prior to the follow-up interviews. These interviews took place in the participants' own homes, which allowed us to study the context in which interaction with UDK occurred.

To aid our analysis of how e-government channels are domesticated in different ways we wanted the participants to vary in terms of their preferred means of interaction with public authorities. We selected participants to ensure, that participants who preferred to use e-government channels and those who preferred traditional channels were both included. To examine how citizen's experience with the service in question influence the domestication process and CC we included participants that had been single parents for a long time, and some that had only recently become single parents.

We created a personalized, semi-structured questionnaire for each participant (Kvale, 1994). After the interviews the participants were asked to solve a few tasks related to family benefits and the e-government channels. This offered insight into participants' knowledge and habits as regards G2C interactions. The interviews were recorded with an mp3 player. Immediately after each focus group discussion and interview the most important findings were documented. The material was transcribed and imported to Atlas.ti for analysis. The participants' statements were coded and analyzed according to domestication theory and the themes discovered in the call center. To guide our analysis during coding we developed a series of questions in a dialectal process between the theoretical framework and our empirical data (Friese, 2012).

5. Findings

This section presents the results of our analysis of single parents' actual use of e-government channels according to the aspects of the domestication process presented in Fig. 1.

5.1. The appropriation of e-government channels

To analyze the appropriation aspect we studied how the e-government channels were brought into the households, how single parents reacted to the channels becoming mandatory, and

Table 2 Key findings related to the appropriation of e-government channels.

Aspect	Questions guiding analysis	Key findings
Appropriation	How are e-government channels introduced into households? What are the reactions to mandatory e-government? How do single parents make e-government channels their own?	<ul style="list-style-type: none"> • E-government channels are mandatory, but supplied by government for free. • Active resistance through non-use and negotiations with caseworkers, passive acceptance, adaptation. • Single parents cannot change the content of e-government channels, but they offer suggestions for improvement.

how they made the channels their own. Table 2 presents key findings related to the appropriation aspect.

5.1.1. How are e-government channels introduced into households?

The introduction of the e-government channels into single parents' households differ from other technologies, as the content is provided for free and the channels are mandatory to use. Failure to use the e-government channels can result in economic sanctions as the single parent may lose certain economic benefits. To use these channels citizens need Internet access; all of our participants had such access at home. In 2013, 98% of Danish single parents had computer access and 97% had Internet access at home (Statistics Denmark, 2013).

5.1.2. What are the reactions to mandatory e-government?

Our participants are aware that they have to use e-government channels, especially borger.dk. Most also know that they are required to read their digital post. The responses to the mandatory services can roughly be grouped into three categories; active resistance, passive acceptance, and adaptation. According to domestication theory negotiations regarding the meaning and use of technologies take place in and around the household. We found that most of these negotiations take place with caseworkers. One participant actively resisted the mandatory requirement, and shared his strategy for doing so with the other participants during the focus group discussions:

Glen (M42) (Focus group 4): *"The [method] I have used during those hassles with something to fill out [online], I've kind of exploited, and acted a bit stupid in front of those at the municipality and said 'Can you please do this for me?' (...) my computer has broken down."*

This is the only example of active resistance to the mandatory requirement we observed. Our participants are generally positive towards digitization and appreciate the increased convenience that it offers. However, they repeatedly criticized the quality of public authorities' online content. One participant relates the mandatory nature of e-government to a lack of choice regarding public authorities in general.

Maria (F41) (Focus group 3): *"I am forced to use the service. The public authorities do not seem to want to supply me with the information I need nor do they seem to want to make it attractive to use the services, as private companies do. But I am not able to choose. I have to live with them."*

This passive acceptance and perception that you 'just had to live with it' is reflected throughout the focus groups. The portal borger.dk is called 'boring' and 'uninviting'. Some participants said it was not a place where they 'spend their weekends'; they only use the website when they have to. We also found what may be regarded as an externalization of ones' problems, by stating a concern for disadvantaged groups in relation to mandatory e-government. The concern for others was often expressed along with personal experiences and problems encountered. Most of these problems do not revolve around access to ICTs or digital skills, but a lack of knowledge of the benefit system and difficulties interacting with public authorities in general.

Lene (F41) (Focus group 1): *"I'm a university student, I work at a government agency and I was completely lost. I'm thinking, My Lord, the poor woman or man who has a ton of problems to begin with and isn't used to that website [borger.dk], I don't even dare to think of what they would do."*

5.1.3. How do single parents' make e-government channels their own?

The third strategy consists of attempts to adapt the e-government channels, or more frequently, offer suggestions for how increased personalization and automation could improve the services. They cannot make these changes themselves, as the authorities control the

content. This limits the extent to which participants can appropriate e-government channels and make them their own. A general complaint about borger.dk is that the information presented is fixed and generic. Participants want information relevant to them as individuals according to their current needs, which are often grounded in changes to their life-situation. Further, many participants have had to transfer their data across public authorities, and suggest that this should be done automatically. They regard public authorities as one unit, and do not understand why they have to supply information, which is already known. This shows how the perception of public authorities can influence demands and needs for G2C interaction. The participants are generally unconcerned about privacy issues related to information sharing. This may be an indication of the high level of trust Danish citizens have in public institutions (Marozzi, 2014). We will return to the suggestions for improvement in the discussion section.

5.2. The objectification and incorporation of e-government channels

Objectification and incorporation covers the spatial, temporal and symbolic aspects of the domestication of a technology. We have mostly focused on the instrumental side of domestication, such as where and how single parents' interact with public authorities and which channels are used. We have found many examples of how our participants identify themselves as single parents, employed or unemployed, as self-reliant or not, or as skilled or novice ICT-users. Mastering e-government channels does not seem to be as important for making a claim about their competence. Moreover, the e-government channels are not displayed as status symbols. The interaction with public authorities is mostly carried out when one is alone and therefore not visible to others. However, during the focus group discussions the participants talked about their practices related to G2C interactions and revealed the underlying perceptions and cognitions informing these. We cover this in relation to the conversion aspect of domestication. Table 3 presents key findings related to objectification and incorporation.

5.2.1. Where does the interaction with UDK occur?

At the time of the study, UDK's services were accessible from traditional computers with Internet access. Most participants interact with UDK from their home, and often in the evening when children do not require attention. Although the primary channels for G2C interaction have been digitized, many supporting tasks that the citizens need to carry out still bind them to their household. We found several other factors, which led to the G2C interaction being carried out at home. Some participants were concerned about the social aspect; they did not want to be

Table 3

Key findings on the objectification and incorporation of e-government channels.

Aspect	Questions guiding analysis	Key findings
Objectification and incorporation	Where does the interaction with UDK occur?	• Mostly at home in the evening due to documentation and complexity of task.
	When does the interaction with UDK occur? Which channels do single parents use for interaction with UDK? How and why does channel interplay occur? How are e-government channels incorporated into routines?	• Strong patterns in single parents' interaction with UDK caused by system-based events and life events. • Frequent use of third party channels; web-banking, search engines, and discussion forums; only 40% of visits to borger.dk go through front page. • E-government and traditional channels are used simultaneously not just sequentially. Problems encountered online causes traffic on traditional channels. • E-government channels connect to routines through third party channels.

seen contacting public authorities while at work. Others lacked access to computers and personal information at work. Most participants keep financial information on their computer or in folders at home. Transactions through e-government channels and access to Digital Post require the use of NemID (EasyID), a paper card the size of a credit card. Many keep this card at home, which limits their access to e-government channels. Finally, the complexity of the tasks and the advanced form of data handling required cause many to conduct the tasks using computers with mouse and keyboard, and at night, in a quiet environment.

Lis (F42) (Focus group 1): *“You can do it nice and easy, figure it out by yourself, when you want to. (...) and you can do it at night. And you're not stressed out with work and kids, because I know when I have to do those things I need to concentrate, and I get mad if things happen around me, and if something goes wrong I get furious, so I need [my surroundings to be] quiet when I do this, and it is quiet at night.”*

5.2.2. When does the interaction with UDK occur?

The participants' frequency of interacting with UDK or using borger.dk was generally low. However, at an aggregated level, we observe clear patterns in citizen-initiated contacts to UDK. We have identified two types of events, which cause interaction with UDK; events in the life of the single parent or their children or system events such as payments or the annual declaration single parents have to make to reaffirm that their circumstances have not changed. We have found similar patterns for other benefit areas; when UDK make payments or sends letters citizen-initiated traffic increases.

System events, which are the most frequent, require less knowledge of the benefit system, than life-events, which can change one's benefit eligibility. The event that caused most to call for help was becoming a single parent, typically following a divorce or the death of their partner. Participants often need to inquire about benefit eligibility, application procedures, and processing times. Infrequent interactions with public authorities mean that most participants do not develop these skills or retain knowledge about borger.dk or its self-service applications. They had difficulty navigating borger.dk, and finding relevant sections. Moreover, they were often eligible for benefits across several sections of UDK and other authorities. The participants therefore have to combine information distributed across borger.dk and third party websites. This silo structure was experienced the strongest by those that had become single after the mandatory e-government strategy was in effect and had to find online information on benefit eligibility by themselves.

Payment was mostly regarded as business as usual, and an invisible part of life unless any changes occurred. Borger.dk presents information regarding benefits such as rules, tariffs, payment dates etc. Most participants, however, get information of incoming payments from web banking statements, which do not explain why a change has occurred. This lack of information in the channel associated with payments is a frequent cause of frustration and calls.

5.2.3. Which channels do single parents use for interaction with UDK?

The participants knew they had to use borger.dk to look up information regarding family benefits, but many also used search engines (mostly Google) to find information on third party websites. Some participants said that information provided by other citizens is easier to understand than that provided by public authorities, as it is written from a fellow citizen's point of view and not in a bureaucratic jargon. Further, some websites provided answers to questions asked by other citizens in similar situations. Participants also used their web-banking statement as a source of information regarding payments. Two third party channels in particular, Google and Web-banking, were far more important to the participants than borger.dk. They had domesticated these channels and incorporated them into their routines for browsing the Internet and handling tasks related to their personal finances. In line with previous domestication studies, we find that existing routines

for online interaction have a stronger impact on how e-government channels are used, than vice versa. The use of third party channels means that single parents' path through the official websites can differ from the one anticipated by public authorities. Web-statistics confirmed this finding; only 40% of those that access borger.dk go through the front page. This can cause citizens to miss information, which is only provided on the front page.

5.2.4. How and why does channel interplay occur?

The data collection in UDK's call center revealed that e-government and traditional channels often are used simultaneously rather than sequentially. Many of the callers were logged on to borger.dk. Our participants state that they often start an interaction online, but encounter problems or lack of feedback, which makes them unable to complete a task or uncertain if the task is completed. This leads them to add traditional channels to an ongoing online interaction; i.e. calling while remaining in front of their computers. The need for documentation often guided CC. It was especially important to the participants who were economically dependent on the benefits. Failure to supply information, or send a request for benefits within a given deadline could result in missed benefits for a given period. Some participants had developed their own method for documenting when a task was completed, by saving screenshots.

Laila (F45) (Focus group 5): *“I take a copy and put it into Word, and then I'll have it if there's a problem with the municipality, I can open it and say 'here' right?”*

Ditte (F51): *“Then the problem is if your computer suddenly breaks down, the hard drive, then it's all gone (laughs). I have tried that. So I'm hedging my bets. I have tried having the hard drive break down, and then there's nothing left.”*

Laila: *“Then you just send it, put it into an e-mail and send it to yourself instead of putting it into a Word document.”*

Although ICT-skills and use of other internet services, especially online banking, seems related to the willingness to use e-government services, there were many frequent callers with high ICT skills. Those that manage by themselves seem to trust public authorities, have a good understanding of the benefit system, and perhaps most importantly, express a high degree of self-efficacy and even stubbornness when dealing with public authorities. Those who did not have negative experiences with public authorities were not concerned about receipts. Some participants prefer turning up in person to hand in documents, because they had experienced letters being lost in the mail. Counterturn up provides certainty that the documents are received, and an opportunity to ask if everything is in order. In the discussion section we offer recommendations for how these needs can be met.

5.2.5. How are e-government channels incorporated into existing routines?

Digital post was not mandatory at the time of the study, but it was possible to sign up for it and no longer receive traditional letters. A few participants had incorporated digital post into existing routines, through other media. They had signed up to be alerted of new digital post via e-mail or SMS, which they used frequently. Others used a shortcut from their web-bank to e-Boks, which hosts digital post. This saved them from logging in twice. When they completed their banking tasks they would proceed to check for new digital post. This shows how seemingly small features can facilitate the incorporation of new channels into existing routines. However, for such features to work, large organizations need to cooperate on their implementation.

5.3. The conversion of e-government channels

The focus group discussions allowed us to study how our participants shared their ways of domesticating e-government channels and

Table 4
Conversion.

Aspect	Questions guiding analysis	Key findings
Conversion	How do single parents share their domestication of e-government channels?	<ul style="list-style-type: none"> • Through off- and online conversations • By helping each other with G2C interaction • Political views influence demand for self-service applications.

the underlying perceptions, which informed their actions. Table 4 presents key findings regarding the conversion of e-government channels.

5.3.1. How do single parents share their domestication of e-government channels?

We observed variation in our participants' domestication and view of e-government. Most participants appreciate the increased convenience digitization offers, especially the ability to conduct transactions at home and at night. Some have fully incorporated both the e-government channels and the idea of self-service, and effectively become their own caseworkers. Others initiate an interaction by calling UDK. We observed how they would share tips for making the interaction with public authorities smoother, such as how to get ahead in a phone line, how to create receipts, or how to negotiate with caseworkers.

Sometimes participants contested each other's statement on e-government channels. One mentioned how face-to-face contact was an effective channel to get a task solved, as caseworkers are forced to help those that show up in person. To another participant the benefit of face-to-face interaction was that caseworkers could provide emotional support during a personal crisis such as a divorce. This shows how a life-event can cause the need to contact a public authority, and influence the channel preferred for this interaction.

Lene (F41) (Focus group 1): "They're forced to solve the problem when you show up in person." Tina (F42): "But personal contact also provides empathy. It provides understanding, compassion, some 'You're going to be okay'. You don't get that from a damn computer, by ticking four boxes."

The perception and use of channels for G2C interaction was not a controversial issue. Whether public authorities should provide a complete overview of all benefits caused the most heated discussions.

Belinda (40) (FG3): "Yeah, what are your options, right? Because right now you have to try all the different links, and if you haven't tried it before, you have no idea, what can I apply for?"

INT: "How did you get this information?"

Belinda: "When I became single it was at the municipality, but I had to walk around to all the various sections, and I thought, Jesus, this is really tiresome!"

Maria (F41): [Interrupts] "But what this is really about, part of borger.dk is basically a political question, which goes straight to the core of our welfare society. What kind of benefits are you entitled to? (...) Navigation is also about not just creating a smorgasbord, but have people apply according to their needs. (...) So maybe I don't need the benefits I am entitled to. So there are these ethical and political dilemmas in creating a website like borger.dk, right?"

5.4. The moral economy of the household

The moral economy of the household is not a separate aspect of domestication, but rather a set of underlying cognitions and evaluations, which affects the entire domestication process. We found that these underlying perceptions influenced not just the channels in a

Table 5
The moral economy of the household.

Aspect	Questions guiding analysis	Key findings
The moral economy of the household	How does single parents' view of UDK influence the interaction?	• Perception of benefit system influences channel choice as well as nature of interaction.

G2C interaction, but also informed the nature of the task itself. Table 5 presents key findings.

5.4.1. How do single parents' views of UDK influence the interaction?

Some of our participants who had the most experience with the benefit system start by contacting public authorities through traditional channels to get an overview of benefit eligibility and then proceeded with e-government channels. Their perceptions of the benefit system rather than poor digital skills influence their CC. One participant's awareness of her own limited knowledge of the benefit system guided her CC.

Linda (F39) (Focus group 2): "I would walk down to the local municipality and say I'm single now, what can I get? I've heard I can get [counts with fingers]. (...) But that is because my experience tells me you only get what you ask for. And I don't know what to ask for; I don't know what I am eligible for. (...) So I would turn up in person first and take notes, and then go home and use these digital solutions."

Those that received few benefits, rarely interacted with public authorities, and primarily used e-government channels, tended to regard the benefit system as objective. They did not believe that their CC affected benefit eligibility or tariffs. Other participants said that they had to pull information on benefit eligibility from caseworkers, who wanted to save money. This required interaction through information rich channels. By showing up in person, they were able to resolve ambiguous issues, and interpret caseworkers' body language and intonation and use this non-verbal information as cues to know when to probe for more information.

Susan (F42) (Focus group 1): "If you don't understand the answer you get, or you're still uncertain, if they [the caseworkers] sound uncertain, it is easier to probe. Directly when you have a (gestures eye contact), both what am I supposed to do here, exactly, and have them point out, if you have doubts or uncertainties, what exactly is it you need to know? What are your options? What can I get help for as a newly single mother? Because they keep very quiet about that, if they can save money due to your ignorance, right? (...) In that way personal communication is better, right?"

A similar view on the benefits of personal interaction came from a participant who was an early retirement pensioner and had frequent interactions with public authorities.

INT (Follow-up interview): "But you're saying that there is a difference in the benefits you receive?"

Linda (F39): "Absolutely! (...) And I am certain that my personality and smile and kindness are important, and if I go to the counter and have a conversation with a caseworker (...). Of course it does. I have a friend who's had a rough life. If he goes up there alone he will not get anything. But if I join him, he will get something. I'm positive that, not I, but the way I behave, matters."

In the call center, we were informed of how some citizens would repeatedly call in an attempt to get a better outcome. A participant's friend had successfully followed such a strategy.

Lene (F41) (Follow-up interview): "I have a friend who is on sick leave, she tried calling, they'd forgotten to pay her money, she hung

up because she got into an argument with the caseworker, calls up again to talk to another caseworker, and managed to solve the problem. My friend was aware of this [that there are different caseworkers who answer the telephones] (...) That is scary.”

6. Discussion

6.1. Contributions to CC studies in e-government

We began this study by asking how single parents actually use e-government channels. Previous e-government adoption and CC scholars have focused on explaining citizens' willingness to use individual channels, by isolating factors such as channel characteristics, and the nature of an initial problem. What happens after the point of adoption or CC has received little attention. Moreover, the focus has remained on the government's channels. By studying actual use of real services across channels, rather than the intention to use a single channel, we have made several findings, which contribute to CC literature in e-government. Table 6 presents the major findings of our study.

Our application of domestication theory has sensitized us to studying the context in which G2C interaction occurs, and helps us to regard this interaction from the citizen point-of-view. This led us to study the entire service encounter across channels, including the use of third party channels. Inspired by MRT, CC studies have demonstrated how the nature of a pre-determined problem can influence CC. We found that many problems occur during an online interaction after the initial CC. To solve these problems people turn to the telephone while remaining online. Thus multi-channeling is not just sequential, but also simultaneous. Moreover, from a domestication theory perspective, what constitutes a problem and how to solve it varies based on one's perception of public authorities and the benefit system. Citizens who believe that the benefit system is subjective will look for channels, which allow them to negotiate with workers and thereby improve the likelihood of being granted benefits. This requires direct interaction with a caseworker, either face-to-face or through the telephone, you cannot negotiate with a computer. Our results indicate that trust in public authorities not only influences the channels used in a public service encounter, but also the nature of the interaction.

Studying G2C interaction as a process across channels also proved to be valuable. Many calls made to UDK concern simple request for receipts or status updates. When faced with a problem our participants often add channels to an existing interaction rather than switch channels. This shows that cross channel G2C interaction not only takes place sequentially, but also simultaneously. Although some problems exist prior to a G2C interaction, many occur during the interaction because the e-government channels do not meet single parents' needs. Not being able to find information or lacking feedback from an e-government channel were typical causes for calls. We found that our participants' knowledge and perception of the benefit system also guided their CC. ICT skills did not appear to be as important here. Finally, our studies indicate that there are external forces besides marketing which influence CC; citizens also influence each other, although this

area requires further studies. Our findings show the benefit of studying actual use, and using qualitative methods, as it allows participants to present their own answers, which can lead the researchers into unknown areas. We cannot make statistical generalizations from qualitative studies, but now these areas can be studied further quantitatively.

6.2. Practical implications

How can domestication studies contribute to improving e-government services? Following Haddon (2007) we regard domestication theory as a lens which sensitizes us to study certain aspects of the way people use, or reject, a technology. We regard the alternate uses of e-government channels and the continued use of traditional channels as expressions of single parents' unmet needs and extensions of their habits for using ICT and for interacting with public authorities. E-government channels can be improved to fit citizens' actual needs through personalization and automation. The suggestions from our participants relate to UDK's presence on borger.dk:

- Remove generic information to improve navigation.
- Customize information to the citizen's life situation, benefits received, and status of cases.
- Provide an overview of benefit eligibility to the individual citizen, regardless of which public authority administers the benefits.
- Have data appear pre-entered into application forms.

Studying the incorporation aspect led us to findings on channel switching and addition. The findings suggest that the use of traditional channels can be reduced by improving the content and adding interactive features to the e-government channels, thereby providing instant feedback. Many calls to UDK are information requests concerning a completed online transaction. These information requests can be reduced by changing the way letters, forms, and webpages are written from the current bureaucratic perspective focusing on legal demands, to instead informing what the outcome are to the citizen, and especially what actions are required of them. Digital receipts can reduce calls by providing:

- Confirmation that data sent by the citizen has been received.
- Information stating if the task in question has been completed.
- Status of the case in question, especially estimated processing times.

Nevertheless, there will always be citizens who need traditional channels either because they do not have the necessary digital access or skills, or because they are in a unique situation, which cannot be anticipated and programmed into a web service.

E-government channels will be more useful if they are customized to citizens' routines related to G2C interaction. The connection to third-party channels such as search engines and web-banking can be improved by allowing web-content to be copied and used on third party websites, acknowledging that citizens do not necessarily follow fixed paths through the website, and presenting details on changes to payments in web-banking statements. Support options should take the

Table 6
Major findings.

Topic	Results from previous studies	Contributions from study
Channels used in public service encounter	<ul style="list-style-type: none"> • Government owned 	<ul style="list-style-type: none"> • Third party channels; search engines, web-banking, discussion forums
Use of multiple channels	<ul style="list-style-type: none"> • Sequential 	<ul style="list-style-type: none"> • Simultaneous
Impact of trust	<ul style="list-style-type: none"> • Willingness to adopt e-government channels 	<ul style="list-style-type: none"> • Perception of benefit system influences CC and the nature of an interaction
Cause of traditional channel use	<ul style="list-style-type: none"> • Difficult problems, lack of ICT access or skills 	<ul style="list-style-type: none"> • Problems occurring during interaction, lack of feedback (i.e. receipts, status update)
Skills required for e-government use	<ul style="list-style-type: none"> • ICT skills 	<ul style="list-style-type: none"> • Knowledge of benefit system and authorities
External factors influencing CC	<ul style="list-style-type: none"> • Government marketing 	<ul style="list-style-type: none"> • Other citizens

user context into account. Text or voice-based chat and co-browsing, where a caseworker participates in a citizen's online session, can help citizens complete tasks while remaining online thereby reducing calls. This support should be available in the evening to fit citizens' routines.

For citizens to fully utilize the e-government services they must appear meaningful and citizens must be able to make them their own. The demand for personalized and customized services and citizens' creative ways of getting around restrictions underlines this. Rather than regarding these actions as a by-product of adoption they are a vital part of the domestication process. If the channels do not meet citizens' needs, they will turn to traditional or third party channels, mandatory or not. As the authorities control the channels, citizens cannot make all the changes themselves. Ironically, the authorities have to make these changes for the citizens, to make them more self-reliant and increase their use of self-service applications. The suggested improvements can accommodate unmet needs and increase the use of the e-government channels and reduce the use of traditional channels. In this way, our study becomes part of a feedback loop between UDK and citizens, as shown in Fig. 2.

This only works if citizens are granted freedom in how to use the channels, i.e. there is space in which the alternate uses of the channels can be conducted. The domestication process has to be analyzed, and the resulting recommendations have to be implemented. This entails that public authorities, who supply the e-government channels, are willing to update them. Thus, the supply of e-government can be regarded as a continuous process, as the channels for interaction and the content provided are changed to accommodate citizens' needs in addition to technical and political developments.

7. Conclusion, limitations, and further work

In this paper, we have presented a mixed method analysis of citizens' domestication of mandatory e-government channels. The analysis was based on channel traffic to a public authority, followed by focus group discussions and individual interviews in participants' own homes.

We found that citizens' actual needs and behavior in a public service encounter can go beyond what is offered from one public authority's e-government channels. Therefore, citizens' way through a service encounter can take different paths and use other channels than those provided by a single authority. The problems that cause a change in channels often occur during an interaction, and may not be anticipated by the citizen, the public authority or researchers. As citizens' domesticate electronic services, they find inadequacies in the system and cracks to exploit. This can cause them to invent ways of working around limitations, for instance by creating their own receipts. By studying these processes, public authorities can learn how to improve their e-government services to better suit citizens' needs. In this way, citizens' actions become part of shaping and re-creating the technology.

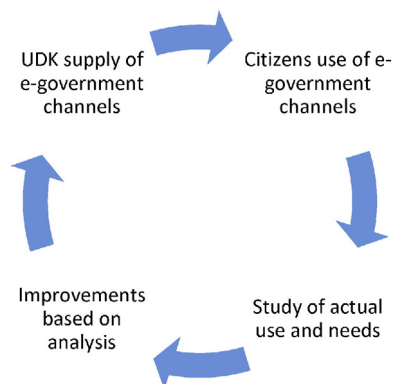


Fig. 2. The feedback loop from domestication studies of e-government channels.

Such improvements may result in higher efficiency rates, improved satisfaction, and reduced use of traditional channels.

This study takes place in a particular setting; Denmark has the highest e-government adoption rates for citizens in the EU, and has made e-government channels mandatory. Danish single parents have high ICT skills and almost everyone has Internet access at home. The service also matters; the economic benefits are vital to many single parents and this impacts their need for reassurance and documentation. The conditions of our study may impact the use of our findings and recommendations in other settings.

Follow-up studies could be conducted on different population groups and policy areas to study how citizens' ICT skills and knowledge of the task at hand influence use of e-government channels, and their needs in a G2C interaction. Studies conducted in non-mandatory settings would allow for comparison and discussion of mandatory e-government. We conducted our study during a one-year period. Follow-up studies with the same participants could offer valuable insights into how e-government channels are domesticated over time. Finally, we have only briefly touched upon how citizens help each other when dealing with public authorities. Citizen-to-citizen interaction affects both uptake and use of e-government channels, and studying such interaction can highlight needs, which the e-government channels do not satisfy. Future studies should create more knowledge on this area.

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Paper #4. “*Warm Experts in the age of mandatory e-government: Interaction among Danish single parents regarding online application for public benefits*”

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Abstract:

Citizens' adoption of e-government channels has been the focus of both academic studies and public policy for over a decade. Current efforts seek to reduce citizens' interaction with caseworkers through traditional channels in favor of increased use of e-government self-service channels. To increase adoption rates and reduce the costs of public administration, the Danish e-government strategy has made e-government self-service channels mandatory thereby attempting to turn citizens into their own caseworkers. The channel choice branch of e-government studies how citizens and businesses choose interaction channels in a public service encounter. Until now, studies of citizens' channel choice have taken place at the level of the individual and ignored the influence of group processes. Moreover, although the importance of digital literacy has been widely recognized in relation to citizen channel choice and e-government adoption, citizens' knowledge of public administration and administrative processes has received less attention. To cover this gap, we conducted a qualitative study of how citizen-to-citizen interaction influences channel choice in public service encounters, and how citizens share advice for seeking public benefits. The study entailed five focus group discussions and nine follow-up individual semi-structured interviews with Danish single parents who receive public benefits. We employ domestication theory and the concept of 'the warm expert' to inform our analysis. Our findings show that the interaction and advice sharing among citizens extends beyond the choice of channels and also covers how the selected channels are used and evaluated. In addition to helping each other with how to use e-government self-service channels, citizens also share practices for negotiating with public authorities. This negotiation requires the use of traditional channels and concerns areas such as increasing the likelihood of being granted benefits and ways of getting around the mandatory

requirement for e-government self-service channels. Based on our findings we present contributions to the channel choice field and offer suggestions for how to expand and update a previous channel choice process model.

Keywords: channel choice; citizen-to-citizen interaction; domestication theory; e-government; multichannel; public benefits; single parents; warm experts;

1. Introduction

The digitization of the public sector impacts both administrative processes within government, and government-to-citizen interaction (Bertot & Jaeger, 2008; Chadwick & May, 2003). Citizens' increased use of self-service e-government channels is regarded as critical to achieving economic savings in public administration (Kernaghan, 2013; Reddick & Anthopoulos, 2014). In Denmark, e-government channels (websites, digital post, online self-service applications) have been made mandatory for multiple public services to lower the costs of public administration.

The channel choice (CC) branch of e-government studies citizens' and businesses choice of communication channels in public service encounters (Madsen & Kræmmergaard, 2015; Pieterse, 2010). Most CC studies are conducted at the level of the individual citizen. Field experiments and case studies have shown how public authorities can influence citizens' CC through marketing efforts and by improving communication surrounding a service encounter (Madsen & Kræmmergaard, n.d.; Teerling & Pieterse, 2011; van de Wijngaert, Pieterse, & Teerling, 2011). However, there are few studies investigating whether, or how, citizen channel choice, use and evaluation can be influenced by other external parties besides public authorities.

According to domestication theory 'people construct their own technological practices, but in interaction with other people's practices' (Sørensen, 2004). In line with this theory, Bakardjieva (2005) has developed the term 'warm expert' to explain how people learn to use information and

communication technology (ICT) from someone in their personal network. We contribute to the CC literature, by applying domestication theory and the concept of ‘the warm expert’ in a study of how citizen-to-citizen interaction influence online public service encounters. The research question guiding our study is:

- *How does citizen-to-citizen interaction influence channel choice, use and evaluation for government-to-citizen interaction?*

Our study revolves around single parents’ interaction with the new public authority Udbetaling Danmark (Payments Denmark) (UDK) regarding family and housing benefits. Family benefits is an umbrella term for multiple benefits for parents with children under the age of 18. Single parents can receive additional benefits if they are not living with other adults under ‘marriage-like conditions’. Housing benefits are rent-supplements to citizens with low household incomes. Some single parents are eligible for additional economic benefits, which are administered by other authorities. Citizens are required to find information and apply for benefits on the public web-portal borger.dk (The Danish Government, Danish Regions, & Local Government Denmark, 2011). Following the digitization strategy, traditional letters from public authorities have been replaced by digital post, a system much like e-mail. Digital post is accessible via borger.dk and the privately run e-Boks. All of these services require the citizen to login using NemID (EasyID), a digital identification system.

This paper is structured as follows: We first present the CC field, and the gaps we seek to cover. Section three presents domestication theory and the concept of ‘the warm-expert’, the theoretical lens guiding our study. Section four presents the methodology for the empirical study. Sections five and six present and discuss the findings, and implications for research and practice. The final section contains concluding remarks, limitations and suggestions for future studies.

2. Channel choice literature

Madsen and Kræmmergaard (2015) conducted a literature review of the CC field analyzing 36 papers published from 2005 – 2014, and divide these into two groups; papers which focus on CC at the level of the individual citizen, and those who focus on multichannel management (MCM) at the organizational level. Statistical modeling, especially in the shape of variance models, is the most common method in CC studies. These studies focus on how factors such as channel characteristics, task and personal characteristics, situational constraints, and satisfaction with previous encounters influence CC and the resultant satisfaction with the encounter (Pieterse & Ebbers, 2008; Pieterse, Teerling, & Ebbers, 2008; Reddick, Abdelsalam, & Elkadi, 2012; Reddick & Anthopoulos, 2014; Reddick & Turner, 2012; Reddick, 2010). Results from CC studies show that citizens prefer to use the Internet to look up information, but prefer traditional channels such as the telephone or face-to-face to solve problems (Madsen & Kræmmergaard, 2015). Although social influence has been found to impact the adoption of technology (Fulk, Schmitz, & Steinfeld, 1990; Venkatesh, Morris, Davis, & Davis, 2003), there are no studies of citizen CC at the group level.

Teerling and Pieterse (Teerling & Pieterse, 2011) present an alternative to the variance models by studying individual's CC behavior through a process model, which is presented in Figure 1. The model is reprinted with the permission of both authors and publishers.

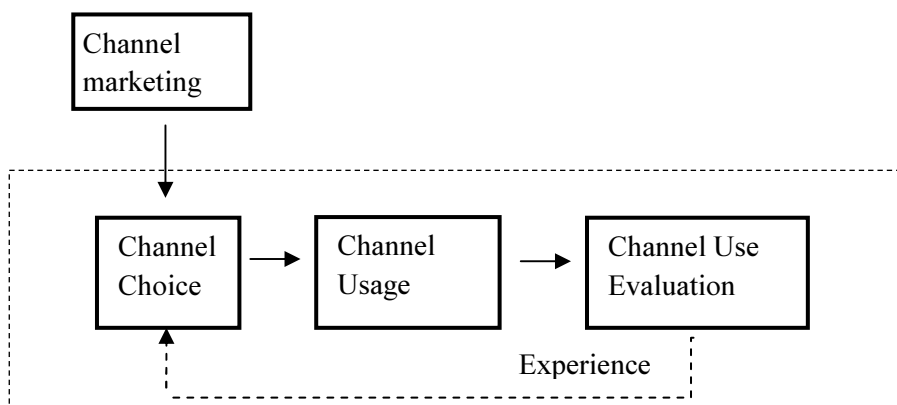


Fig.1 Citizen multichannel behavior.

According to the model, citizen multichannel behavior can be divided into three steps; channel choice, use and evaluation. When citizens are faced with a task involving public authorities they begin by choosing a channel among those that are available. They proceed to use this channel, but may switch to, or include, traditional channels in the interaction if problems arise. Citizens then evaluate the channels used and the overall service encounter and it becomes part of their experience. In this way their experience can also impact future CC. If people have had a bad experience with a certain channel, they are less likely to choose this channel again. Finally, the model shows that an external force, in the case of a government agency, can influence CC through marketing efforts.

Although the model describes the choice and use of an individual channel, the authors highlight that actual use can entail simultaneous use of multiple channels (Teerling & Pieterse, 2011). The model differs from previous CC studies by acknowledging that CC is not just the result of an individual's cognitive processes, but can also be influenced by external parties. Moreover, it regards CC as a process, which extends beyond the point where a channel is chosen and includes the use of the channel, and evaluation of the interaction afterwards. The model developed by Teerling and Pieterse resembles the expectancy-value models from the Uses and Gratifications tradition in media science (McQuail, 1994; Palmgreen & Rayburn, 1985), which propose that people choose media to obtain certain perceived gratifications, and the evaluation of their media experiences feeds back into future choices. Teerling and Pieterse's model differs from the expectancy-value model, however, in that it does not include people's beliefs as a factor which might influence CC.

Teerling and Pieterse (2011) identify four instruments a government agency can employ to increase citizens' choice of e-government channels; communication, legislation, economical incentives, and the quality of the web service itself. Through a mixed method study they measure how citizens perceive these instruments. They find that *'the combination of well-designed web*

services and communication regarding these possibilities seems to be the strongest combination that influences citizen multichannel behavior.' (Teerling & Pieterse, 2011, p. 179).

The process model is supported by empirical studies. Teerling and Pieterse (2010) conducted an experiment which showed that a letter could be used to guide citizens online. Madsen and Kræmmergaard (n.d.) present a case study of how a public authority experienced increased use of an online self-service application, and a large reduction in calls, after re-designing an online application and improving the surrounding communication.

However, Teerling and Pieterse do not examine if and how other external parties can influence CC. Nor do they study the influence of external parties on channel use and evaluation, which occurs after a channel has been chosen. By including other citizens as influential external partners, we wish to address these gaps and expand the existing knowledge about CC. To do this we conducted an empirical study, which examines how citizens influence each other's CC and interaction with public authorities. Having presented the gaps we seek to cover, we now turn to our theoretical lens; Domestication theory and the concept of 'the warm expert'.

3. Theoretical lens: Domestication theory and 'the warm expert'

Domestication theory was developed by British and Scandinavian researchers in the 1990's by combining elements from anthropology and consumption studies with Science and Technology Studies (STS) and reception analysis (Berker, Hartmann, Punie, & Ward, 2005; Haddon, 2011). Domestication theory has mainly been used to study the processes whereby people reject or make media technologies their own by adapting and integrating them into the routines of everyday life. Domestication scholars reject traditional adoption models for being technologically deterministic assuming not only that technologies will be adopted according to pre-defined patterns, but also that people's actual use will occur the way designers or producers intended. Drawing upon the related

concepts of ‘configuring the user’ (Woolgar, 1990) and ‘scripts’ (Akrich & Latour, 1992) from STS, domestication scholars acknowledge that technologies are designed to be used in certain manners (Bakardjieva, 2005; Liste & Sørensen, 2015). However, inspired by reception analysis, domestication scholars claim that technologies are also open to interpretation by its users (Bakardjieva, 2005; Haddon, 2011; Lie & Sørensen, 1996; Sørensen, 2004).

Domestication scholars argue that people are not passive receivers but active subjects whose backgrounds, habits, and values influence how they perceive and use technology. Rather than focusing on the impact of technologies, domestication scholars are concerned with the practical and symbolic value people assign to technology, and how these values are expressed and exchanged through use, display, and conversation. In this way domestication scholars have extended the transformation of technology from something only occurring in the design stage to also taking place after the point of adoption, and by end users as well as designers.

The adoption of new technology, social processes, and the sharing of skills and practices are all brought together in Bakardjieva’s concept of ‘the warm expert’ (Bakardjieva, 2005). Bakardjieva draws upon the domestication framework in her study of how immigrants in Canada learn to use information technology (IT), such as computers and the Internet. She found that her participants were often introduced to IT via personal contacts, whom she refers to as “warm experts”.

“The warm expert is an Internet/computer technology expert in the professional sense or simply in a relative sense compared with the less knowledgeable other. The two characteristic features of the warm expert are that he or she possesses knowledge and a skill gained in the System world of technology and can operate in this world but, at the same time, is immediately accessible in the user’s lifeworld as a fellow-man/woman. The warm expert mediates between the technological

universal and concrete situation, needs and background of the novice user with whom he is in a close personal relationship.” (Bakardjieva, 2005, p.95).

The warm experts are characterized by their accessibility, their skills, and finally their knowledge of the novice, which allows them to explain how IT works in a manner that makes sense to the novice. Although Bakardjieva focuses on the warm experts' IT skills, other studies show that citizens' lack of knowledge of the specific public service in question and bureaucracy in general also affects CC and can hinder the use of e-government channels (Bertot & Jaeger, 2008; Grönlund, Hatakka, & Ask, 2007; Skaarup, 2012). Therefore we will supplement with an examination of citizens' 'administrative literacy', defined by Grönlund et al. (2007) as *“the ability to navigate bureaucracy, which includes having a good idea of how society's institutions work, the terminology involved and hence being better able to know where to go to find the forms, procedures, contact information etc. necessary, and indeed understand the information once found and being able to act upon it”* (Grönlund et al., 2007, p. 217).

Thus, CC studies have found that the type of problems citizens have influence their CC and subsequent interactions with a public authority. Domestication scholars argue that people share practices regarding technology use through everyday interactions and discussions. Bakardjieva shows how people get help from others in their close personal network, and that these helpers offer identification and possess specific skills. To operationalize our theoretical lens and answer our research question of *how citizen-to-citizen interaction influences channel choice, use and evaluation for government-to-citizen interaction* we start by asking three sub-questions. These questions relate to Teerling and Pieterse's model and previous CC studies, but we seek to answer them through a qualitative study informed by domestication theory and the concept of 'the warm expert'.

- What are the main problems encountered by single parents in relation to public benefits, and what channels are used to solve them? [Channel choice]
- How do single parents get help to interact with public authorities? [Channel use]
- How do single parents share their evaluations of public service encounters? [Channel evaluation]

Our theoretical lens, domestication theory, emphasize that technologies should be studied in the natural contexts where they are used. Domestication scholars seek insight into people's understanding and evaluation of technology, and therefore primarily rely on qualitative methods and observations with several participants. We follow this tradition as it allows us to study people's practices, the underlying values informing them, and the social processes whereby these values and practices are shared and shaped. Having presented our theoretical lens, we now turn to how the empirical studies were conducted.

4. Methodology

To answer our research question, we first conducted five focus group discussions with 28 single parents. These were followed by nine individual semi-structured interviews. A recruitment company was used to find participants for the study from two Danish municipalities. To maintain their anonymity all participants have been given aliases in the published material. Appendix A presents the focus group composition.

The focus group discussions were conducted in April and May 2013. The purpose was to simulate social processes surrounding channel choice, use and evaluation occurring in everyday life. Unlike group interviews, where the interviewer repeatedly asks the same questions to multiple participants, focus group discussions allow the researchers to study social interaction whereby a group create and discuss their perception of a particular phenomenon (Krueger, 1994). Although focus group

discussions take place in artificial settings, they are useful to facilitate discussions and explore people's views and practices, and are frequently used within domestication studies (Bertel, 2013; Ling & Thrane, 2001). To stimulate discussion and interaction among the participants we employed a series of activity oriented questions and exercises (Colucci, 2007). As moderators we deliberately stayed in the background and intervened only to ask follow-up questions (Krueger, 1994). Thereby the participants themselves would bring up topics that mattered to them in their own words.

The follow up interviews took place 6-12 months after the focus group discussions. Nine participants were selected from among the focus group discussants. We included participants who had either mentioned being warm experts themselves, or getting help from warm experts. Further, we included both participants that had been single for a long time, and those that had only recently become single to cover various levels of experience with the family benefit system.

The interviews were conducted as semi-structured interviews following a script which was adapted for each participant (Kvale, 1994). They were carried out in the homes of the participants, as this gave access to contextual information related to their interaction with UDK. After the interviews the participants were asked to solve tasks related to borger.dk and the benefits they received, while the interviewer observed and took notes. The purpose of these observations was to gain first hand access to the participants' practices for public service encounters.

The focus group discussions were recorded on videotape, while the follow-up interviews were recorded with an MP3 recorder. Immediately after each session the moderators took notes of the most striking findings. We initially paid special attention to the parts of the focus group discussions where the participants discussed problems, shared information and practices, and mentioned warm experts to find participants for the follow-up interviews.

The data from the focus group discussions, follow-up interviews and observations were transcribed and imported into Atlas.ti for analysis. The transcriptions were first coded using selective coding following Strauss & Corbin (1998), related to the three sub-questions. We applied color coding to group the key concepts related to our questions such as problems, channels, evaluations of the encounter, and warm experts. We then grouped these concepts into a table to get an overview of the relationship between them (Dahler-Larsen, 2008). For the participants in the follow-up interviews we also created documents with their biographies, their evaluation of public authorities, and their preferred channels. This aided our analysis of the relationship between participants' values and their CC, and in structuring our findings according to the three questions.

5. Findings

Next we present our findings according to the three sub-questions previously asked concerning channel choice, use and evaluation.

5.1 What are the main problems encountered by single parents in relation to public benefits, and what channels are used to solve them?

The problems encountered by the participants in the focus groups concerning their interaction with public authorities take place at two different stages; when they are applying for benefits, and when they are receiving benefits.

Getting an overview of benefit eligibility is difficult according to our participants. UDK administers several benefits areas, which are handled individually by different sections and have individual websites at the portal borger.dk. Some single parents are eligible for additional benefits, administered by other authorities, which also have their own websites. Thus, the information is presented from an administrative point-of-view according to benefit area rather than the citizen's point-of-view and life-situation, e.g. getting a divorce. This represents a catch-22, as single parents

need to know the official names of the benefits before they can search for them on the official portal. As a consequence, some participants had spent considerable time trying to find out which benefits they were eligible for, before they could apply for them. Here lies another frequently mentioned problem, namely understanding the bureaucratic and legal terms used by public authorities. This lack of administrative literacy created many problems for the participants. Thus, the ability to translate information is an important part of the help offered. It is directly in line with Bakardjieva's concept of the warm expert, who she describes as mediating between the system world and the life-world of the novice. This mediation contains two aspects – understanding public authorities' information, and translating it to the single parent, and informing them of what this means to them, and what they have to do. The easiest way to get an overview of benefit eligibility is to talk to another single parent. Belinda has been a single parent for more than a decade and has worked within the public administration. She has extensive experience in dealing with public authorities due to an accident, which left her with a disability as a child. From her professional background and personal experiences she has gained skills that makes her able to help her sister and others following their divorces.

Belinda: "After many years of marriage she [sister] becomes single and needs to find out, what am I eligible for, because she'd never received anything except the regular check [basic child benefit]. So she called me, what do I do, and where do I do it? And then I told her, well you have to apply for reduction in childcare, increased and extra family benefits, and you need to look into whether you can get housing benefit. And then she started [applying], and ended up asking, where do I do this and where do I do that?"

The example illustrates the importance of Belinda's personal experience with the benefits in question. She is able to provide help regarding not only benefit eligibility, but also for how and where to apply. Her help cuts across the individual benefit areas and authorities, and covers the

entire situation from the single parents' point-of-view. This also entails suggesting which channels to use when applying for specific benefits:

Belinda: "And here [UDK website] you can see the different [benefits] they can apply for, including housing benefits. And I would clearly recommend that they call, because I remember you have to fill out all this information, which I cannot find on the rent papers."

According to our participants, most problems occurring while one is receiving benefits revolve around changes to the benefit tariff and payment frequency, due to one's children becoming older or changes in one's income. Our participants did not receive any information concerning the reasons for the changes, which caused many to call either friends or the authorities.

The participants in our focus groups have different strategies for dealing with these problems. Some contact public authorities directly through traditional channels. Others use search engines and third party websites to look for answers. Search engines are popular, as they allow people to use their own search phrases, and offer suggestions in case of misspellings. Third party websites offering legal advice or support groups for single parents provide answers and questions written by other single parents. One participant noted how such information is easier to understand, and more credible, because it is written by fellow citizens in similar situations.

In line with Bakardjieva's notion of the warm expert our participants frequently mention getting help from or helping family members (children, siblings, and fathers), colleagues, neighbors, friends and former partners. They are people with whom the single parents have a relationship, and often someone they know well and regularly meet. The warm experts mentioned by our participants all have ICT access and skills. However, this applies to most single parents and most of our participants as well. ICT skills can be regarded as prerequisites, which let one carry out online tasks related such as using a search engine to find information, browse websites, and successfully conduct

transactions via self-service applications. However, for someone to successfully apply for public benefits they need administrative literacy as well.

5.2 How do single parents get help to interact with public authorities?

We found considerable variation in how the help was offered; from a quick phone call to a friend or sharing information by chance during a social encounter, to fixed arrangements with the expressed purpose of finding and applying for benefits. These fixed arrangements often occur in settings where the interlocutors are together, either face-to-face or on the telephone. The help offered extends beyond applying for benefits, and also covers other ICT-related and economic issues. In line with previous domestication studies of single parents, they also extend to other areas such as looking after children or fixing things around the household (Bakardjieva, 2005; Haddon & Silverstone, 1994; Russo Lemur, 2006).

During one of the focus group discussions we witnessed how practices for interacting with public authorities was shared first hand. One participant, Anne, became aware that she should have filled out an online-form to re-affirm that she was still single. The other participants quickly helped her out.

Anne: "I'm thinking is there anything I should have printed from my computer and signed?" [Looks at the other participants]

Elizabeth: "No there isn't. You used to get it by mail. But you don't anymore, now you have to use the computer. (...) But this one went to the computer, you have to sign it. (...) . It's in your e-Boks [a website which stores digital post].(...) My e-Boks sends an e-mail to my personal mail-address whenever there is a new post in e-Boks. (...) And that's where the single's declaration is, you need to sign it."

Suzanna: [Interrupts] “Do you have web-banking?”

Anne: “Yes I do, but I don’t use it.”

Suzanna: “You can go through web-banking to your e-Boks, that’s the easiest way of doing it. (...)

You need to get a friend to come visit.”

Anne: “Well my oldest boy, he also knows how to do those things.”

Dorte: “(...) I’m also a complete illiterate with the computer but there are just some things you have to do when you have kids (...). But if you’re totally lost you can go to the local municipality. And you can get guidance there. I tried to fill out this declaration as well, but my computer wasn’t set up to receive it, so I had to go there and they helped me.”

Anne:” I’ll do it tomorrow, I’ll go tomorrow.” [Laughs].

Glen: “What I do, during those kind of troubles, with something to fill out, I have repeatedly kind of exploited, acted a bit stupid in front of those at the municipality and said ‘Can you please do this for me? (...) I can’t receive it, my computer is down.”

The other participants inform Anne what channels to use, how to use them, and why it is important. They provide tips for saving time and offers suggestions of people she can turn to for help. Dorte provides empathy and a means of identification, by letting Anne know that she’s not the only one who has experienced having problems with the declaration. Glen shares a way of tricking the caseworkers and getting around the mandatory requirement. His example shows that citizens’ actual interaction with public authorities can be opposite to the government’s intention, and how citizen-to-citizen interaction, whereby such practices are shared, does not always serve the government’s interests or increase the e-government adoption rates.

5.3 How do single parents share their evaluations of public service encounters?

We found that participants' evaluations of other organizations sometimes carried over to their perception of UDK as well. We found an interesting connection between our participants' perception of public authorities and the strategies and channels they employed in public service encounters. Their evaluation and strategies were often shared and exemplified in personal stories and anecdotes. Broadly speaking, the participants who use traditional channels would be more likely to indicate that the benefit system is subjective. They argue that they can influence caseworkers by charming them and negotiating. Whether such negotiation actually works is heavily contested among the participants. Participants who prefer e-government channels disagree, and argue that the system is regulated and has fixed tariffs.

Some participants provided examples of how they got different answers depending on which caseworker they spoke to, and how they had to negotiate with case workers to get information about benefit eligibility or to be granted benefits. This belief informed both their channel choice and use, as negotiation requires telephone or face-to-face contact with a human partner. During the focus group discussion Linda repeatedly referred to the subjectivity of the benefit system.

Linda: "I absolutely do not take no for an answer."

Louise: "Why not?"

Linda: "Because I know, if she [caseworker] says yes [to a request for a benefit] she'll get more paperwork, and they're on a schedule, so it's easier for her to say 'No Linda, you can't have that'."

During the follow-up interviews, Linda went into more detail with this aspect, and mentioned how it influenced her channel choice, as well as the nature of the interaction.

INT: "The second aspect (...) is the likelihood that you'll be granted these benefits."

Linda: “Yes, definitely, I still believe in that. (...) I see myself as friendly, groomed and all that. And I know how to communicate. So I’ll get further if I show up in person at the counter, right? And I think it’s like that in many situations, right? (...) if I say, ‘Oh that’s a nice bracelet you’re wearing’, then I can charm her, and she’ll think I’m nice and say ‘Of course you can get that Linda’.”

Similarly, Belinda would mention how her neighbors would call her as an expert, because they got different answers from different caseworkers.

Belinda: “Many of the rules are open to interpretation. I’ve seen that in relation to my disability, according to one caseworker I could get this and that, and when they were replaced with a new one, then all of a sudden I couldn’t get it. And I was like, but it’s the same disability, and I’m still enlisted at the same education, well I couldn’t. (...) So there’s no doubt that it depends on how they interpret the legislation within the area, because you’ll notice if you read it, that it is quite vague, right?”

Belinda’s example demonstrates how warm experts, due to their experiences with the specific benefits and with public authorities in general, can help challenge the caseworkers’ decisions. Here, as with the mandatory requirement for e-government channels, we note that citizens interpret the rules regarding public benefits and share their interpretation with each other. In the same way as the previous example, this interpretation is not necessarily in line with the public authorities’ intention.

Having presented our findings of how citizen-to-citizen interaction can influence CC use and evaluation the next section discusses these findings in relations to previous CC studies.

6. Discussion

In the following we discuss our findings by taking Teerling and Pieterse’s conceptual model as a point of departure. This section is divided into sections which discuss each step of the model;

channel choice, use and evaluation. Then we discuss areas where our results differ from previous studies, and offer suggestions to update the conceptual model according to our findings. As these suggestions are the result of a single qualitative study, they should be regarded as preliminary until they are confirmed by further studies.

There is a five-year interval between our empirical study and the study conducted by Teerling & Pieterse's (2011), and e-government channels are mandatory in Denmark. However, the studies also share several similarities. They revolve around public service encounters regarding public benefits for parents. Additionally the Netherlands and Denmark are relatively similar in terms of citizens' high levels of trust in public authorities, Internet access and use of e-government services (Marozzi, 2014; Statistics Denmark, 2014). In spite of the differences, we still believe the studies can be compared at the conceptual level.

6.1 Channel choice

Like Teerling & Pieterse we find that communication influences CC. However, we find that the external source of the communication can be fellow citizens, as well as a government organization. Thus our results suggest, that CC is not just the result of a cognitive process in the individual citizen, but also of a social process whereby citizens share information. Further, we find that CC is not only influenced indirectly by an individual's perception of what others do, and how one thinks they will react to one's choice, but also directly through social interaction, such as people helping each other interact with public authorities.

We found considerable differences in the level of trust people place in information from external sources. Some participants prefer the information they receive from other citizens, as it is easier to understand and identify with fellow citizens than public authorities. Some also distrust caseworkers and believe that there are other reasons than legal behind benefit processing. This is a contested

issue, some participants distrust caseworkers, while others clearly state that they fully trust public authorities and prefer their advice, especially in comparison to advice from online strangers. Either way, our findings suggest that a person's beliefs also influence their CC and their response to external forces.

6.2 Channel use

Although Pieterse and Teerling's model includes both CC and use at the conceptual level, they do not distinguish between these aspects in their study. They focus on how public authorities can influence citizen's CC, not the way the channels are used.

By conducting a study at the group level rather than the individual level, we find that the practices shared not only concern which channels to use, but also *how* channels should be used, and *why* they should be used in certain manners. The results suggest that social influence is more than just a factor, which leads to lower or higher adoption rates, but also affects how the actual use occurs. Inspired by domestication studies, we found practices that do not follow the intentions in the digitization strategy. On the contrary, some practices relate to how citizens can charm caseworkers to spend more time on their cases, increase the likelihood of being granted benefits, or getting around the mandatory requirement for e-government channels. Through citizen-to-citizen interactions, people share and shape their interpretation of not only technologies, but also public policies. It is important to note people's interpretation of e-government policies and technologies is not necessarily in line with public authorities' intentions, and citizen-to-citizen interaction may reduce the adoption of certain technologies.

6.3 Channel evaluation

Finally, we found that other people can influence the evaluation and perception, not only of channels, but, more importantly, also of the public authorities and the task in question. In the focus

group discussions participants shared perceptions of public authorities and their experiences in communicating with them through various channels. Other people's practices, especially if coming from someone in one's personal network, can have a significant influence on one's own perception of public authorities, and public service encounters.

We find that discussion concerning channel practices in public service encounters is related to how one regards public authorities, as subjective or objective, the task in question, and the available channels. In line with previous studies on social influence we found that such evaluations are often shared through the use of stories and anecdotes (Schmitz & Fulk, 1991).

6.4 An expanded process model for channel choice, use and evaluation

Returning to Teerling & Pieterse's process model, we find that citizen-to-citizen interaction occurs in all three steps of the public service encounter. Thus we suggest that the process model can be expanded by including co-citizens who may influence each of these steps.

We also find that public service encounters do not start at the point of channel choice. Rather an event, either in one's life, or one generated by the public service system, generates a need to interact with public authorities to solve a task. Determining what this task is, and how to solve it, happens before a channel is chosen. Once the task has been determined, it influences both channel choice and use. This task awareness is often created through citizen-to-citizen interaction, either in person or on third party channels. We therefore suggest that another step in the model called 'Task awareness' can be inserted.

Finally, we repeatedly found that participants' perception of public authorities influence how they interact. This suggests, that it is not only one's prior experience with a public service encounter, that influence future encounters, but also the underlying belief that one has in public authorities. Therefore we suggest that citizens' perception of public authorities is added to the model.

Figure 2 presents our suggestions for how to extend the process model to include citizen multichannel practices. This includes citizen-to-citizen interaction, task awareness, and perception of public authorities. The original model's elements are formatted in bold to distinguish it from our additions. Although our findings are generally in line with previous domestication studies, the suggested extensions are based on a single study as mentioned earlier. Thus, more research using quantitative methods is needed to validate the extension of the model.

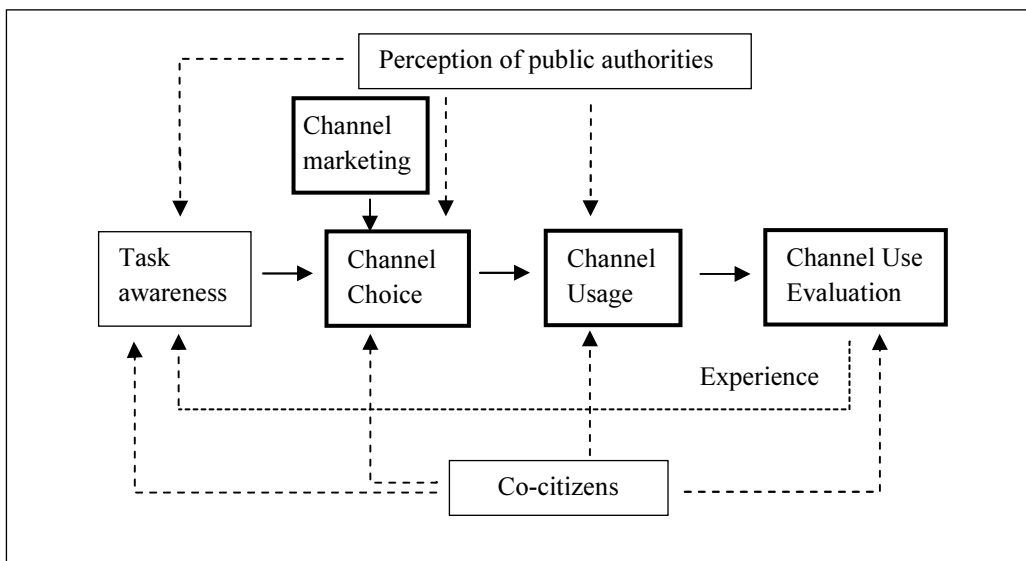


Fig. 2. Suggestions for expanding the CC process model.

7. Conclusion

We set out to study how citizen-to-citizen interaction influences channel choice, use and evaluation for government-to-citizen interaction, and have done so by conducting focus group discussions followed by individual interviews and observations. By applying qualitative methods, we have gained insight into how citizens share their practices and the underlying perceptions informing these practices. Our study offers several contributions to the e-government and channel choice literature.

Unlike previous studies, which have focused on individual citizens' CC in voluntary settings, we studied actual use among groups of citizens in a mandatory setting. Applying domestication theory as our theoretical lens, we demonstrate that citizens are not only informed by public authorities, but also by each other. Our results suggest, that channel choice, use and evaluation are not just the result of cognitive processes within an individual but also social processes between citizens. Digital literacy is not the only requirement to use e-government self-service channels; administrative literacy and knowledge of the benefits in question are also important. Although citizens may want to use e-government channels, their situation might not fit to the system's requirements, or they may not know what to do. Having a friend or relative explain this, perhaps from personal experience, is of great help.

We also found that citizen-to-citizen interaction is not necessarily in line with the intentions of public authorities, for instance by sharing ways of getting around the mandatory requirement. This finding follows from our application of a social constructionist framework, domestication theory. The understanding that people do not always do as they are told, but also make technologies and policies their own is something which we believe both e-government scholars and practitioners should take into consideration. Our study suggests, that citizens perceptions' of public authorities also influence the channels they choose in public service encounters. These perceptions are shared through personal stories and anecdotes along with practices for how to negotiate with caseworkers. Government organizations who wish to utilize social networking services should consider this first.

We chose to study citizen-to-citizen interaction through direct methods of observation. Thus we have not conducted in-depth studies of citizen interaction on third party websites. However, our results indicate that such interaction is important, and influences people's perception of public authorities and public service encounters. One important limitation of our study is that all of the participants are between the age of 36 and 51, and the majority are women. Moreover, among the

28 participants only one had a non-Danish background. Had we conducted our study with elderly citizens for instance, digital literacy might have received more attention. If we had done a study among immigrants, language would likely be an important factor.

Future studies can examine how people's perception of authorities are shared and shaped online. One topic, which would be particularly timely for such an analysis, is how people share their perceptions and practices related to mandatory e-government. Another suggestion is to repeat the study, but conduct it among different population groups; young people, the elderly, or non-native citizens for instance. As we have applied qualitative research methods we cannot quantify or test the impact of citizen-to-citizen interaction, nor can we validate the suggested extensions to the process model. Scholars who wish to do so, should apply quantitative methods and/or conduct field experiments.

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Appendix A. Focus group composition and participants

Alias	Age	Gender	Occupation
Focus Group 1. Copenhagen, April 23rd 2013.			
Monica	42	F	Nurse
Maja	36	F	Student
Tina	42	F	Office clerk (unemployed)
Lis	42	F	Self-employed
Lene	41	F	Student
Tanja	41	F	Actor
Sten	47	M	Carpenter (unemployed)
Focus Group 2 Copenhagen, April 30th 2013			
Ulla	45	F	Psychologist
Louise	42	F	Student, hairdresser
Hanna	38	F	Student, graphic designer
Linda	39	F	Janitor (unemployed)
Focus Group 3 Copenhagen, May 2nd 2013			
Susan	42	F	Office clerk
Belinda	40	F	Office clerk
Tine	41	F	IT project coordinator
Maria	46	F	Head stewardess
Gitte	41	F	Director
Focus Group 4 Vordingborg, May 22nd 2013			
Dorte	50	F	Pedagogue
Glen	42	M	Painter
Anne	43	F	Pre-school teacher
Elizabeth	50	F	Childminder
Susanna	43	F	Accountant
Tom	45	M	Canteen manager
Focus Group 5 Vordingborg, May 23rd 2013			
Laila	51	F	Janitor
Sanne	45	F	Head nurse
Janni	45	F	Office clerk
Marianne	38	F	Student, factory worker
Ditte	37	F	Childminder (unemployed)
Kim	47	M	Civil servant

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Paper # 5. “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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How to succeed with multichannel management. A case study of cross-organizational collaboration surrounding a mandatory self-service application for Danish single parents

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.

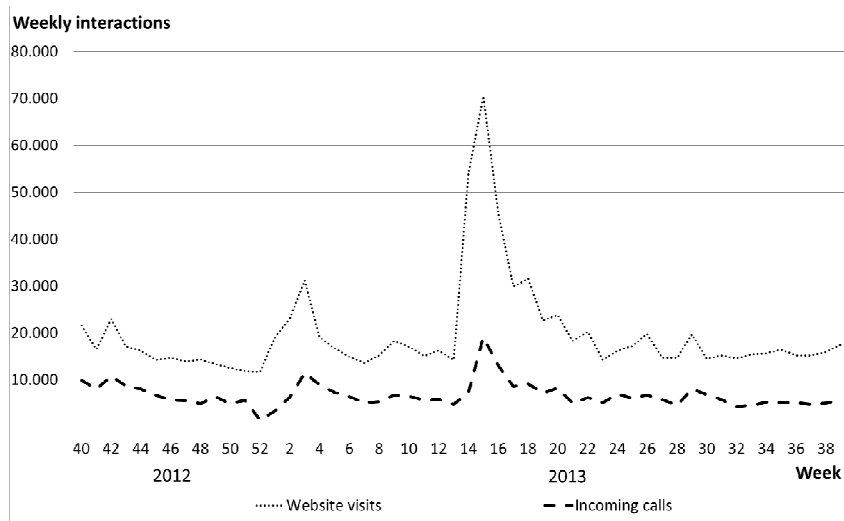
Family benefits and the 2013 single parent's declaration

'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

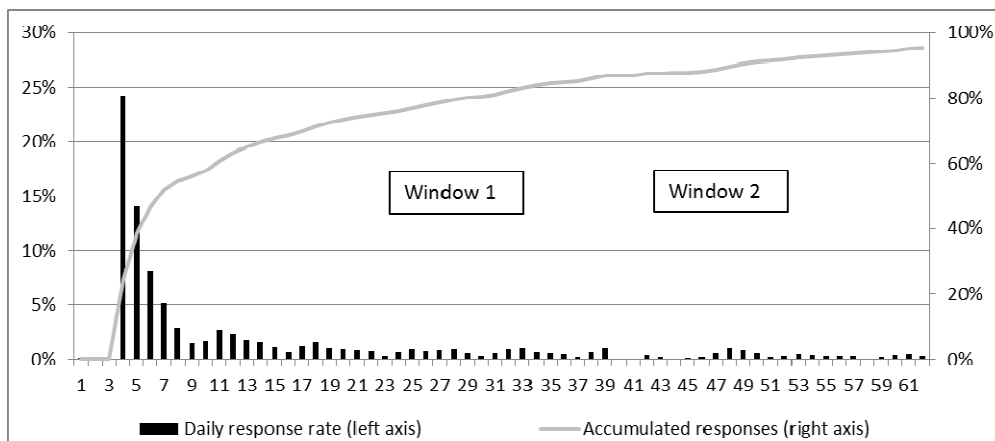
In 2014 80 percent of the single parents received the letter concerning the single parents’ declaration as digital post compared to roughly 50 percent in 2013. The 2014 declaration process followed a similar schedule to 2013. The declaration period was divided into two periods. After the first six weeks (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.

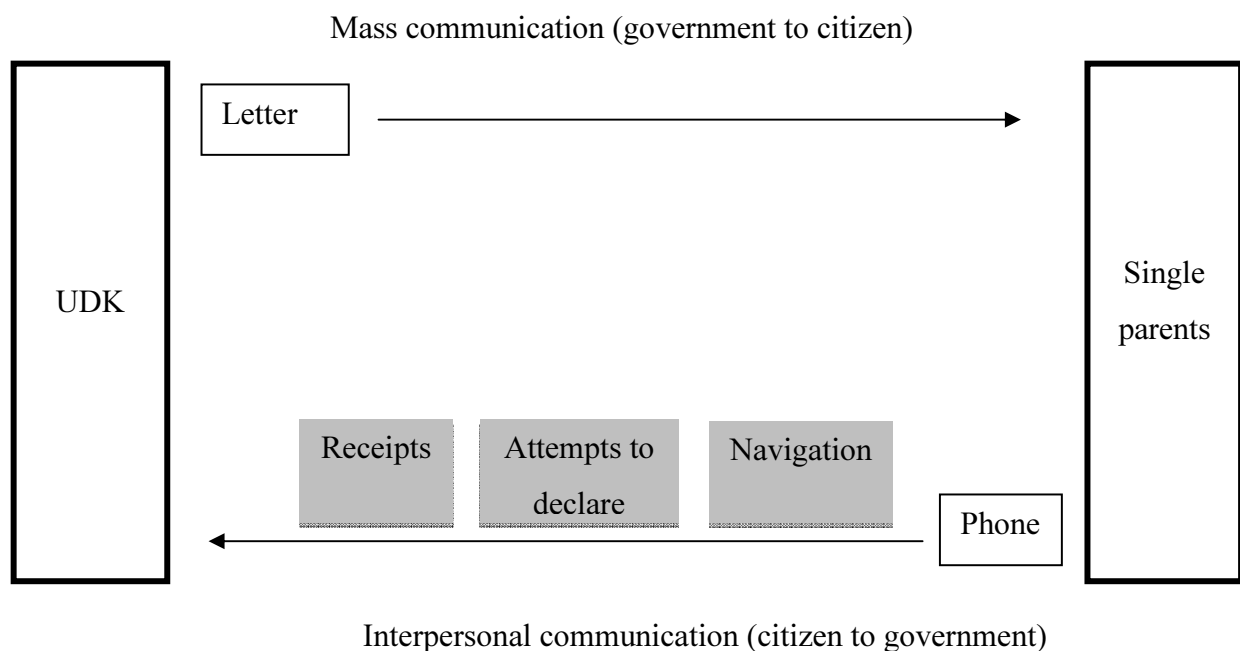
- However, increased use of e-government channels does not in itself ensure efficiency gains, as many keep using traditional channels.
- Poor communication surrounding e-government channels can create rebound effects in the shape of increased information requests via traditional channels.
- Improved 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 & Ebbers, 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

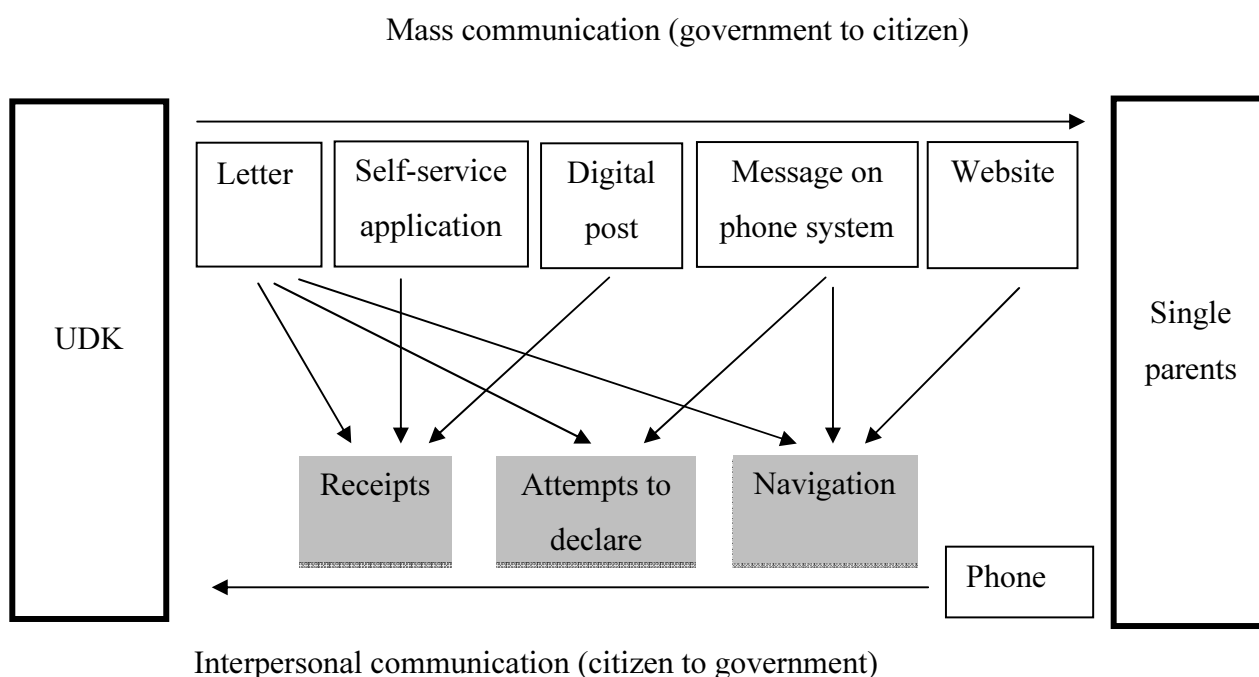


The cross-organizational collaboration attempted to reduce calls for the 2014 declaration by addressing these issues. The efforts undertaken can be divided into two groups; improving communication on existing channels, and adding new channels to the overall service encounter. Communication efforts were 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.

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