

E-government harm

An assessment of the Danish coercive digital post strategy

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E-government harm:
An assessment of the Danish
coercive Digital Post strategy

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E-government harm: An assessment of the Danish coercive Digital Post strategy

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My most heartfelt thanks and gratitude go to the people at the Copenhagen Citizen Service and Assens Citizen Service for sharing their work life experiences with me and making me feel trusted. This goes both for staff and managers. Meditating on a Swedish mountain top, I was disturbed by an idea. I wanted to give staff a voice, to have them tell about our achievements - in a movie. I had to write a manuscript before I could find tranquility at the mountain top. Thank you all, for what became a fun finishing event. I feel, everyone was proud when we played the movie for the rest of the municipality.

At Assens Job Center, I was heavily affected by the case handlers concern about ‘their’ citizens - a concern, I experienced not only at the job center. I was actually confronted with this concern from the people that actually deal with the citizens right from the beginning of my PhD study. At first, it was annoying and disturbing, but I learnt to listen. From the clerical staff trade union (HK), I was prepared to hear that members were troubled about Digital Post. Maybe they were, but did not tell their union. However, one consultant explained that the members constant and unstated complaint about how Digital Post degraded the service *towards citizens*. This information eventually resulted in a survey of nearly 17.000 union members, leading to surprisingly new information about the staff’s concern for the citizens and new scientific knowledge about e-government adoption – and subsequently, my first journal submission. Thank you for that possibility. I want to express my grateful thanks towards all the public employees that I have had the pleasure to be in contact with, you have really showed me what enacted technology may be.

The biggest public sector systems vendor, KMD, has contributed with access to transaction data through 4 years that made it possible to detect some very interesting adoption differences amongst the 98 Danish municipalities and led to my first accepted conference paper. Thank you to the staff of the Print Services Department that has always provided the data in a flexible and informal way. Further, they invited me to present and discuss the findings internally in KMD and to deliver input to their development process. The Print Services Department also gave me the opportunity to present and discuss findings with staff from local government – on several occasions - which gave me valuable input and the possibility of triangulating my results. Throughout the entire study, I have had informal contact and collaboration with many people within the Digitization Agency. Generally, it has been a very interesting experience. I’m grateful for the provision of Digital Post transaction data from the Agency and the opportunity to present and discuss my findings on several Digital Post network meetings with practitioners from public institutions.

After 25 years in industry, my entrance into academia as a mature person has been a challenge. I want to thank all the senior scholars that have inspired me and had the patience to introduce me to academia - at doctoral consortiums, on PhD courses and co-authors that I have been lucky to work with. Finally, I want to praise the small network of Danish mature, male industrial PhD-students within e-government that I have shared experiences with since the beginning. I share a special bond with my PhD-roomie at Roskilde University; our sharings have been dear to me. Finally, thanks to my two daughters and my mother with whom I have discussed Digital Post with for many years now - they have willingly shed light on how the young and the elderly perceive this e-government initiative.

Resumé:

Danmark har som et af de første lande i verden valgt at bruge tvang ifm. den offentlige digitalisering. Med digitaliseringsstrategien 2011-2015 har Regeringen i samarbejde med regioner og kommuner valgt at gøre mere end 70 offentlige services tvungne digitale, herunder kommunikation med det offentlige i form af Digital Post. Regeringen har samtidig aftalt med regioner og kommuner, at besparelsen tages på forhånd som en reduktion af statens bloktilskud.

Dette studie undersøger implementeringen af Digital Post ud fra en kritisk forskningstilgang ved samarbejde og engagement med praktikere i primært kommunerne. Studiet forholder sig kritisk ved at undersøge og sætte spørgsmål ved de skjulte antagelser om at de forventede fordele ved overgang fra analoge til digitale løsninger kommer af sig selv og at digitaliseringen kan klares ved at øge brugervenligheden og sende borgerne på IT-kurser. 8 forskellige empiriske cases med fokus på forskellige niveauer indgår i studiet. Udbredelsen af Digital Post i de 98 danske kommuner afdækkes i perioden fra 2010 til 2013 og viser store forskelle. På nationalt niveau undersøges, hvordan 243 danske myndigheder håndterer digital post fra borgeren. Udover igen at vise stor forskel på myndighedernes håndtering, viste undersøgelsen stor uvidenhed om Digital Post samt manglende evne til at håndtere kompleksiteten. Studiet omfatter også en evaluering af de forventede portobesparelser. Digital Post har medført et direkte økonomisk tab for kommuner på i alt 78 mio. kr. i 2013 og 38 mio. kr. i 2014.

Aktionsforskningsstudier i Københavns og Assens kommuner afslørede en række konkrete barrierer for Digital Post, der både stammer fra kommunens egen håndtering samt barrierer, som kommunerne ikke har kontrol over, bla. juridiske forhold, systemer, der ikke var integreret med Digital Post og manglende digital parathed hos andre myndigheder. Delphi-studie og fokusgrupper i disse kommuner viste, at medarbejderne undlader at sende digital post af hensyn til borgerne eller fordi det ikke passer med arbejdsprocesserne. Herudover afslørede disse dybdegående, kvalitative studier, at medarbejdere føler et øget arbejdspress og en fældende arbejdsglæde med Digital Post. Det sidste knyttes sammen med det, digitaliseringsstrategien kalder ”medbetjening” og mantraet om at ”den, der kan, skal”. Medarbejderne oplever, at de ikke må hjælpe borgerne direkte, men skal hjælpe borgeren til selv at være digitale og dette bryder med medarbejdernes forestilling om god borgerservice. Det opleves især frustrerende for medarbejderne, at svage borgere (der ofte også har begrænset adgang til IT) overlades til sig selv. Tendenserne fra de kvalitative studier går igen i en spørgeskemaundersøgelse af HK-medlemmer, hvor det undersøges, hvordan medarbejderne oplever at Digital Post har ændret servicen overfor borgeren. Her rapporterer 21% om situationer, hvor de undlader at bruge Digital Post af hensyn til borgerne mens andre 26% beretter om situation, hvor Digital Post blev opfattet som dårligere service.

Medarbejdere og Borgere er optaget af ubalancen i den tvungne digitalisering. Borgerne skal være digitale og har selv ansvar for at printe, opdatere computer og læse digital post, mens myndighederne ikke har pligt til sende digitalt, har svært ved at svare på digital post og at ikke alle myndigheder skal være digitalt kontaktbare, som politikerne lovede i 2010. Digital Post opleves også som en urimelig ekstra skat. Borgere giver også udtryk for ubalance ift. de design-fejl, som dette studie har afsløret og offentliggjort. Myndighedernes mulighed for at ændre i historiske beskeder samt at Digital Post i nogle situationer viser forkert afsender/modtager skaber utryghed og mistillid til systemet samt vrede og utilfredshed når Finansministeriet ikke viser forståelse overfor disse bekymringer. Herudover finder borgere og medarbejdere det uværdigt, at fritagelsen for Digital Post, hvor borgeren skal møde op på rådhuset for at søge om fritagelse, kun kan få fritagelse i to år og trues med bøde og fængsel. Borgere oplever at mødes med mistillid fra borgerservicemedarbejderen.

Studiets resultater er løbende blevet formidlet i forskellige sammenhænge til forskellige aktører indenfor den offentlige digitalisering samt offentliggjort i pressen. Resultaterne har haft konkret indflydelse på implementeringen samt på udformningen af Digital Post. Herudover har studiet medvirket til at støtte en række myndigheder i implementeringen.

Studiet konkluderer, at overgangen til tvungen Digital Post har haft skadelig virkning for de offentlige myndigheder, for medarbejdere, for borgere og for den offentlige ethos. Andelen af borgere, der går ind for digital kommunikation mellem borger og myndigheder faldt fra 2013 til 2014. Modstanden imod digitaliseringen hos borgere og medarbejdere risikerer at stige, hvis ikke Regeringen ændrer strategi.

Intentionen med studiet er at besvare forskningsspørgsmålet: Hvorfor medfører Digital Post skade og hvad kan der gøres for at imødegå dette?

En anden implementeringsstrategi kunne formentlig have imødegået de negative virkninger. En erkendelse af kompleksiteten af dette store forandringsprojekt peger på en mere transparent proces med direkte involvering af medarbejdere, borgere, virksomheder og myndigheder til at sikre større tilfredshed ved større lydhørhed og løbende inddragelse af praktiske erfaringer. Herudover har få designbeslutninger haft stor betydning for de negative virkninger af Digital Post. Videreudvikling af den digitale post til en ikke-sikker e-mail, enklere NemID login, minimering af afhængigheder af tredjepartssoftware som Java, nemmere fritagelsesproces samt at borgerservicemedarbejderen kunne betjene computeren for borgeren er eksempler på dette. Eller, hvis bare myndighederne havde ventet med at sende PDF formularer til borgerne til de kunne besvares digitalt, ville mange borgere og medarbejdere have undgået unødige negative virkninger. Digital Post er etableret som mange fragmenterede implementeringsprocesser med begrænset koordineret indsats. Dette studie har vist, at når der opstår en fejl i håndteringen fra myndighedernes side, så er det umuligt at finde ud af, hvor fejlen er opstået, hvem der har ansvaret og hvor den skal rettes. Kompleksiteten og variansen i de enkelte myndigheders løsninger burde have været minimeret, fx ved at etablere et centralt ansvar for hele kommunikationskæden mellem myndighed og borger. Den manglende transparens i den samlede tekniske løsning er uheldig når det er borgeren, der igennem lovgivningen har ansvaret – og dermed bevisbyrden. Digital Post har herudover været unødigt vanskeligt at kontrollere fordi Finansministeriet har valgt at gøre projektet afhængigt af IT-markedets evne til at tilbyde de nødvendige løsninger.

Jeg argumenterer for, at det er muligt at gennemføre tvangsdigitalisering uden at det går ud over nogen og foreslår, at den offentlige digitalisering bliver underlagt en etisk ramme. Studiet foreslår 10 etiske principper samt institutionelle rammer til at varetage den løbende udmøntning af de etiske principper. Det vil være skadeligt, hvis Digitaliseringsstyrelsen får held til at italesætte den næste digitaliseringsstrategi, som noget, der naturligt følger efter denne første tvangsdigitaliseringsstrategi. Der er behov for pause – der skal ikke være flere strategier før de etiske rammer for den fortsatte digitale udvikling i Danmark er fastlagt – efter et folkeligt mandat. Er det et samfund, vi vil være bekendt, der tvinger svage borgere til at kommunikere med det offentlige via en kanal, de ikke mestrer eller er trykkelige ved – især når deres livsgrundlag afhænger af denne kommunikation?

Dette studie viser helt klart, at forskningen i offentlig digitalisering ikke er tilstrækkelig nuanceret og ikke er på forkant med udviklingen i praksis. Der er brug for at anerkende, at forskelligheder indenfor myndigheder, borgere, medarbejdere og services har konsekvenser for digitaliseringen. Den gængse forskning i udviklingen af offentlig digitalisering, 'trin-modellerne' har ikke været i stand til at forudsige tvangsdigitalisering. Herudover er det nødvendigt at øge forskningen omkring medarbejdernes betydning for implementering af offentlig digitalisering da studiet viser, at medarbejderne underlader at bruge løsningerne, hvis digitaliseringen ikke er

etisk forsvarlig overfor borgerne. Studiet har afdækket, at offentlig digitalisering har skadelig virkning. Offentlig digitaliseringsskade findes imidlertid ikke som begreb i forskningen. Jeg foreslår en konceptuel model for offentlig digitaliseringsskade samt ontologiske og epistemologiske betragtninger ift. offentlig digitaliseringsskade som et nyt begreb. Endelig forsøger studiet at etablere tvangsdigitalisering som et begreb samt de karakteristika, der bør være vigtige at fastlægge i diskussionen af tvangsdigitalisering og dens virkninger.

PhD-studiet er foregået i perioden hvor Digital Post er blevet implementeret hos alle myndigheder og hvor Digital Post er gået fra at være frivilligt til at være tvungent overfor borgerne. Det har således været en meget dynamisk ramme. Igennem de tre år, hvor studiet har været er myndighedernes modenhed ift. Digital Post vokset, den omkringliggende teknologi er blevet forbedret og borgerne har vænnet sig til at bruge Digital Post. For alle de organisationer, medarbejdere og borgere, der har arbejdet ihærdigt med Digital Post og har opnået at se anstrengelserne bære frugt ift. større effektivisering og mere fleksibilitet, kan min fremstilling virke uretfærdig og ensidig. Det har været vigtigst for mig at bevare fokus på skadevirkningerne af digitaliseringen. Jeg har igennem studiet prioriteret faktiske hændelser fremfor skriftlige fremstillinger. Vurderingen af teknologien er således ikke et resultat af studier af kravspecifikationer men snarere en beskrivelse ud fra, hvordan teknologien blev oplevet i virkeligheden.

Denne afhandling består af en sammenfatning samt 7 videnskabelige artikler, hvoraf de 6 har været accepteret efter peer-review og artikel 6 er indsendt til publikation.

Abstract:

The Danish government has been one of the few governments to launch a coercive e-government strategy. According to this strategy, 70+ public services will be mandated digital and all communication between public institutions and citizens/companies will be digital by 2015. The Danish government launched the Digital Post system in 2010, where public institutions and citizens/companies can communicate in an encrypted and authenticated manner. The Danish government and local government agreed that State funding should be reduced according to the estimated postal cost reduction from 2013. Citizens were forced to accept digital post by 2014, although there was the possibility of being exempted.

This study explores the implementation of coercive digital public sector communication from a critical research viewpoint as engaged scholarship and with genuine collaboration with practitioners. The study attempts to reveal the hidden assumptions of technology determinism, rational choice and natural selection that ruled the implementation by investigating various empirical settings. An explorative study of the Digital Post adoption amongst the 98 Danish municipalities from 2010 to 2013 showed immense differences in adoption level. An investigation of Digital Post responsiveness from 243 public institutions on different levels confirmed the variety of public institution capabilities to handle Digital Post. This part of the study revealed that public institutions did not know what Digital Post was, and that they had immense technical challenges sending and receiving digital post. The economic consequences for public institutions from Digital Post was evaluated for 2013 and 2014 and showed a significant deficit. The results were published in the media with the claim that the reduction of State funding should be lessened. Central actors attempted to question the validity of the results and at the same time, refused to perform their own calculations and stated that local authorities would not be compensated.

Two action research studies in two local authorities pointed to a variety of barriers to Digital Post. Barriers were attributed to management engagement and interoperability issues, which might be dealt with locally but also legal barriers, IT systems that were not able to integrate with Digital Post and lack of digital communications readiness or resistance from other public institutions that could not be controlled.

Qualitative studies (Delphi-studies and focus groups) revealed that staff experienced Digital Post as very complex and reported an increased workload. Further, staff found that Digital Post was not appropriate for particularly less able citizens with limited understandings and competencies within IT. Staff reported that citizens experienced loss of welfare rights and economic loss due to difficulties handling the digital channel. Furthermore, staff reported citizens showing anxiety and anger towards the enforced Digital Post. These results were confirmed from a national survey of clerical staff. Finally, staff expressed perceived reduced work life quality due to their inability to assist particularly less able citizens caused by the strategy that staff should only assist citizens to help themselves.

Moreover, the study found a growing alienation amongst staff, a tendency to be less helpful and direct mistrust towards citizens that applied for exemption.

This study concludes that e-government may harm organizations, employees, citizens and the public sector ethos. The research question that the study seeks to answer is: Why is Digital Post harmful and how could this be mitigated?

The negative impact from the Digital Post e-government initiative could have been limited by a few means. If Digital Post had been allowed to forward digital post to regular e-mail accounts, staff would not have experienced the same level of increased workload and fewer citizens would have been harmed by Digital Post due to more citizens being aware of the digital post.

Further, if the Ministry of Finance had taken responsibility for the entire communications chain from front end at the public institution to front end for the citizen, the level of complexity at the public institution end might have been reduced significantly. The project has suffered from lack of control due to the reliance of the commercial market for digital solutions. Further, if crucial design flaws such as basing the citizen end on third party software including Java had been corrected immediately, and citizens did not have to print forms, the complexity level at the citizen end would have been reduced significantly. There is a perception by citizens and staff of imbalance in this coercive e-government initiative, where citizens are forced and have no rights or access to complain and public institutions can use whichever channel they like and central government is imposing deficit on public institutions. The study argues that the public support of the digitization of public services is at risk and that the relations between the public sector and citizens have been negatively affected. The author suggests that it is possible to exert a coercive e-government strategy without harm if e-government is governed and guided by an ethical code. The study proposes an ethical coercive e-government approach comprised of ten ethical principles and an institutional frame to maintain the principles.

There are several implications for research from this study. First, the study shows the deficiency of e-government research in its very superficial treatment of central notions like government, citizen, employees, technology and service. Further, e-government harm does not exist in e-government research. This study suggests a conceptual model that allows the analysis for e-government harm and further, an ontology and epistemology of e-government harm. The existence of e-government harm implies a distinction of what is right from what is wrong. The study suggests an ethical e-government framework to guide coercive e-government. The study also elaborates on the ontology of coercive e-government. Finally, directions are offered of how to establish critical e-government research, e-government harm and coercive e-government as new research agendas.

This thesis comprises a summarizing cover part and 7 research papers. All papers have been accepted after peer-review, except from paper 6 that has been submitted for publication.

Part I Cover

1	Introduction.....	3
1.1	Motivation	3
1.2	E-government research.....	4
1.3	Theory and research question.....	6
1.4	Methodology	6
1.5	Structure and reading guidance	6
2	Background	11
2.1	Danish e-government.....	11
2.2	Digital Post.....	12
3	Related work	33
3.1	E-government	33
3.2	Deficiencies in e-government research.....	64
4	Research approach	69
4.1	My stance	71
4.2	Theoretical foundation.....	79
4.3	The Imposing E-government Harm model.....	86
4.4	Research questions analyzed by the Digital Post Imposing harm model	90
5	Research design	95
5.1	Empirical cases.....	95
6	Findings.....	107
6.1	Impact on citizens.....	107
6.2	Impact on civil servants.....	115
6.3	Impact on organizations	119
6.4	Impact on public sector ethos	131
6.5	Organizational and institutional forces.....	136
6.6	Implementation strategy	147
6.7	Enacted Digital Post	150
7	Discussion	155
7.1	Implications for practice.....	155
7.2	Implications for research	170
7.3	Limitations.....	178
7.4	Future work	179
8	Self-reflexivity	181
9	Conclusion	187
10	References.....	191

Part II Research Papers

Paper 1	203
Madsen, Christian Østergaard, Berger, Jesper B., & Phythian, Mick. (2014). <i>The Development in Leading e-Government Articles 2001-2010: Definitions, Perspectives, Scope, Research Philosophies, Methods and Recommendations: An Update of Heeks and Bailur</i> . Paper presented at the 13th IFIP WG 8.5 International Conference, EGOV 2014, Dublin, Ireland, September 1-3, 2014. Proceedings.	
Paper 2	223
Berger, Jesper B., & Hertzum, Morten. (2014). Adoption patterns for the digital post system by Danish municipalities and citizens. Paper presented at the ECIS2014: Proceedings of the 22nd European Conference on Information Systems, Atlanta, GA.	
Paper 3	239
Berger, Jesper B. (2014). <i>Ethical dilemmas and PD as important steps towards critical e-government design</i> . Paper presented at the PDC '14 Proceedings of the 13th Participatory Design Conference, Windhoek, Namibia.	
Paper 4	245
Berger, Jesper B. (2014). <i>Formative evaluation: A model to ensure value from e-government</i> . Paper presented at the The 11th Scandinavian Workshop on E-government (SWEG 2014), Linköping, Sweden.	
Paper 5	263
Berger, Jesper B. (2014). Mandatory e-government has arrived: The silent protest from staff calls for the committed scholar – resistance must never be futile! Paper presented at the The 25th Australasian Conference on Information Systems, Auckland, New Zealand.	
Paper 6	275
Berger, Jesper B., Hertzum, Morten, & Schreiber, Trine. (2014). Does local government staff perceive digital communication with citizens as improved service? <i>Submitted for publication</i> .	
Paper 7	297
Berger, Jesper B. (2015). <i>E-government harm? Never heard of it!</i> Paper presented at the 12th Scandinavian Workshop on E-government (SWEG 2015), Copenhagen, Denmark.	
Appendix	311
A. Elected statistics on citizens and Digital Post	313
B. Media in relation to the NDP study	314
C. Questions and answers in Parliament	316

Figures

Figure 1 Key achievements of the Danish e-government strategy, the Danish Digitization Agency web site, November 2014	12
Figure 2 The Digital Post enterprise architecture (after Ebrahim & Irani, 2005).....	14
Figure 3 National eID, EasyID, access code chart and token.....	16
Figure 4 National citizen portal, Citizen.dk	17
Figure 5 EasyID first level login with CPR and password.....	17
Figure 6 EasyID second level login with access code.....	18
Figure 7 Digital Post in-box	18
Figure 8 Digital Post address book.....	19
Figure 9 E-mail alert from Digital Post.....	19
Figure 10 The e-Boks interface	20
Figure 11 Received digital post as attachment in secure e-mail.....	22
Figure 12 Received digital post as an attachment to secure e-mail.....	22
Figure 13 Received digital post in ERP system (case handling).....	23
Figure 14 Digital post initiated from application system (sickness welfare benefits).....	23
Figure 15 Digital post initiated from output manager	24
Figure 16 Law about Public Digital Post (The Danish Minister of Finance, 2013).....	26
Figure 17 Notice of Exemption (The Danish Minister of Finance, 2013) and exemption application form (The Danish Digitization Agency, 2014).....	26
Figure 18 Segments of the elderly citizens (TNS Gallup, 2014a).....	28
Figure 19 Awareness of Digital Post, age groups.....	29
Figure 20 Awareness of Digital Post, socio-demographic data.....	30
Figure 21 Use of e-government life-event services (European Commission, 2012).....	37
Figure 22 Dimensions and stages of e-government (Layne & Lee, 2001).....	43
Figure 23 E-government stage model (Lee, 2010).....	44
Figure 24 Unified theory of acceptance and use of technology model (UTAUT) (Venkatesh et al., 2003).....	48
Figure 25 Integrated e-government adoption model (Shanshan, 2014).....	50
Figure 26 Model of computer-mediated communication competence (Spitzberg, 2006).....	56
Figure 27 The Technology enactment framework (Fountain, 2001).....	83
Figure 28 Enacting e-government success model (R. J. Gil-Garcia, 2012).....	86
Figure 29 Imposing e-government harm model	89
Figure 30 Empirical cases according to unit of analysis and time.....	98
Figure 31 Empirical cases according to form of engaged scholarship (Van de Ven, 2007).....	98
Figure 32 Questions to be answered in the Delphi study (CCS1)	99
Figure 33 Survey regarding reasons for not answering DP.....	102
Figure 34 Timeline for interactive process, June 2013 onwards	103
Figure 35 Java update message	109
Figure 36 An answer from a local government through Digital Post.....	115
Figure 37 Calculation of economic result of Digital Post	120
Figure 38 Communication flows from local governments to citizens and companies.....	120
Figure 39 Anticipated and realized digital posts (baseline 2011).....	125
Figure 40 The welcoming screen in the CPR system.....	127
Figure 41 Messages sent without CPR (CCS2).....	132
Figure 42 Messages sent without CPR, 98 local governments.....	133
Figure 43 Questions from public employees regarding exemption from Digital Post (FAQ from Citizen.dk, 30. September, 2014).....	134
Figure 44 Age group and exemption, November 2014	135
Figure 45 Rebild municipality defies procedures of exemption to Digital Post.....	136
Figure 46 Questions to the Ministry of Finance regarding Digital Post (The Danish Minister of Finance, 2013a, 2013b, 2013c, 2013d).....	138
Figure 47 Documentation for sent answer (Court of Næstved).....	145
Figure 48 Responsible e-government ethics, suggested from this study	166

Figure 49 Responsible e-government ethics institutional framework, suggested from this study	169
Figure 50 Attributes of coercive e-government	176
Figure 51 Weekly assessment of Digital Post for all local governments (extract).....	183

Tables

Table 1 Danish e-government 2001 - 2015 (inspired from The Danish Government et al., 2011).....	11
Table 2 Recommended attributes of Certified Mail Systems (CMS) compared to Digital Post	25
Table 3 Reduced state funding to local governments (The Danish Government & Local Government Denmark, 2012)	27
Table 4 Provided services from US counties and local governments (D. F. Norris & Reddick, 2013)	36
Table 5 Services derived from EU e-government projects (from Mates et al., 2013).....	38
Table 6 E-government value impact (Bannister & Connolly, 2014).....	60
Table 7 Characteristics of engaged scholarship depending on research perspective.....	77
Table 8 Characteristics of forms of engaged scholarship (Van de Ven, 2007)	79
Table 9 Institutional pillars (Scott, 2008).....	81
Table 10 Overview of empirical cases (1-4).....	96
Table 11 Overview of empirical cases (5-8).....	97
Table 12 Response rate, NDP study	102
Table 13 Communication characteristics of Digital Post	115
Table 14 Key figures from Digital Post business case (LGDK, 2012).....	123
Table 15 Postal costs, reductions and consequences, 7 local governments.....	124
Table 16 Digital Post potential, local government and national assessment	124
Table 17 Evaluation of Digital Post business case	125
Table 18 Local governments' economic result from Digital Post.....	126
Table 19 Internal management decisions as barriers to Digital Post.....	129
Table 20 Mental barriers related to Digital Post.....	130
Table 21 Internal IT development projects related to Digital Post.....	131
Table 22 Digital Post project goals and provided resources.....	148
Table 23 Attributes of complexity	149
Table 24 Attributes of the enacted Digital Post.....	151
Table 25 Evolvement of research focus during my study	181
Table 26 Number and percentage of citizens not opened DP, age distribution.....	313
Table 27 Number and percentage of citizens not opened DP, socio-demographic distribution.....	313

INTRODUCTION

1.1	Motivation.....	3
1.2	E-government research	4
1.3	Theory and research question	6
1.4	Methodology	6
1.5	Structure and reading guidance.....	6

1 Introduction

What happens when national government decides to reduce postal costs by making local government communicate digitally with citizens? This study is concerned with research in the e-government field – the provision of public services to citizens through the Internet and more specifically with *e-government harm*.

1.1 Motivation

The Danish State launched the Digital Post system (DP) in 2010. My PhD began at the beginning of 2012, when 21% of citizens had joined and all the 98 local governments were supposed to use it to communicate digitally with citizens. Originally, my PhD study focused on what local government should do to ensure cost reductions from DP. However, during the first year my focus gradually shifted to the harm that may be imposed by DP because of three distinct events. First, when I began my empirical work with administrative municipal staff, looking for barriers to digital communication with DP, I found that staff were very emotional about DP. Many were opposed and claimed that it would have a negative impact on citizens. Further, many found that DP increased their stress level. I could not get them to focus on the ‘real issue’ of how they could increase their use of DP to increase cost reduction. Second, DP had been voluntary since 2010, but the Danish government suddenly, in June 2012, after very little public debate, passed a law that made DP mandatory for citizens by 2014 and reduced State funding to local government by the anticipated reduction of postal costs from 2013. It was part of the Danish coercive e-government strategy to digitalize public communication with citizens (The Danish Government et al., 2011). The government, now, had made it compulsory for both local governments and citizens even though staff reported that DP had negative impacts on citizens and on their working environment.

Third, I conducted a literature review on e-government with a PhD student colleague. Our vantage point was a seminal literature review of e-government research from 2001 to 2005 by Heeks and Bailur (2007). They found that e-government research was shaped by technology determinism; overly optimistic about the outcomes of e-government, the research approach was mostly positivistic and detached from any empirical setting and research lacked practical recommendations. Most importantly, though, no research drew on a critical research tradition, “critical in the sense of looking at the systematic and contradictory social structures that impinge on individual actors” (Heeks & Bailur, 2007) and none stated any research philosophy, this indicated little self-reflexivity about the research approach. From our literature review of 50 leading articles from 2001 to 2010, we could only confirm the pattern from Heeks and Bailur, basically, nothing much had changed from 2005 to 2010. On the one hand, I was experiencing public employees stating negative impacts from an e-government initiative and on the other hand, the leading e-government research revealed no perception of negative e-government impacts and no socially critical research approach that would bring forward such negative impacts. Hence, as e-government researchers, we would be ill equipped to understand and assist society to mitigate or prevent harm from e-government. This became the research problem that I wanted to ameliorate.

From workshops with e-government practitioners in the UK, Irani et al. (2007) reported practitioners to be concerned about “the trend to dehumanize the interaction between citizens and government” and that “it is the importance to realize that those most in need of government services are those that are most likely to lack the confidence, training or opportunity to make the best use of them online” (Ibid.). Governments are beginning to offer more and more services online, while reducing opening hours and shutting down face-to-face and phone communication channels. The European Commission notes in a review of digital-by-default strategies

that two governments have chosen a coercive e-government strategy (Denmark and the UK) and that “more are expected to follow” (European Commission, 2012).

1.2 E-government research

E-government research emerged in the late 1990’s as an applied research field, drawing upon IS and public administration. E-government research has been described as immature due to failure to formulate and build core field theories (Heeks & Bailur, 2007). Major streams of research constitute e-government evolution, services (supply side) and citizens’ adoption of e-government (demand side). First, *e-government evolution* is dominated by the stage model approach. The idea is that e-government automatically evolves through a finite number of stages, towards continuously more and better technology to increasingly benefit governments and citizens. The stages are perceived to constitute 1) disseminating information, 2) conducting transactions, 3) integration of systems and services within domains and 4) integration across domains and organizations (e.g. Layne & Lee, 2001). These models have been criticized for being over-optimistic, technology deterministic wishful-thinking, building on weak empirical ground and highly normative (Coursey & Norris, 2008) and for neglecting the citizen’ ownership perspective (K. V. Andersen & Henriksen, 2006). Further, the stage model view has been criticized for being superficial and not bringing enough understanding to the relation between technology, organization and government values (Attour-Oueslati et al., 2007). Other e-government researchers have argued that e-government – on the contrary - evolves slowly and incrementally (Bannister & Connolly, 2012).

Secondly, the *services* of e-government have been widely studied by examining or surveying what services, governments provide through public websites (Coursey & Norris, 2008; Moon, 2002; D. F. Norris & Reddick, 2013). Services constitute non-transactional (information and communication) and transactional (fiscal or non-fiscal). Barriers to the service provision have been reported to relate to lack of funding, absence of skilled IT staff, legal issues, technological issues, organizational and managerial issues (e.g. J. Ramón Gil-Garcia & Helbig, 2007; D. F. Norris & Reddick, 2013). Yildiz (2007) criticizes the examining of public websites for only being descriptive and not able to generate deep understanding about the internal operational processes of e-government. Yildiz recommends researchers base more research on involvement with practitioners and apply grounded theory to further understand e-government dependencies.

Thirdly, a major stream constitutes variance studies grounded on behavioral models (TRA, TPB, TAM, UTAUT etc.) of antecedents for *citizens’ adoption* of e-government. Perceived ease of use, perceived usefulness, trust and risk are major independent variables that have been examined towards an intention to use (Bélanger & Carter, 2008; J. Ramon Gil-Garcia, 2005; Gilbert et al., 2004; Horst et al., 2007). The behavioral approach has been criticized for unrealistic assumptions of rational choice on behalf of full information (Bagozzi, 2007) - humans always have access to necessary knowledge and consequences of their actions and will on this ground make decisions that optimize their outcome. Moreover, that intention to use as dependent variable may not be a proxy of actual use (Venkatesh et al., 2012). However, the models are still widely applied (Rana et al., 2012). E-government has proven not to evolve as anticipated. In the beginning of the e-government era many researchers, private consultants and politicians believed that “build it and they [citizens] will come” (Coursey & Norris, 2008). However there is empirical evidence that citizens’ adoption of e-government is slow, especially regarding e-government transactions (Gauld et al., 2010). Barriers have been stated to include access to computers, availability of the internet and lack of information and technology skills (West, 2004). It may even be that some citizens don’t want online services (Hanson, 2013) or don’t need them (Hakkarainen, 2012).

Current e-government research also contains some apparent deficiencies. Even though, it would seem logical that e-government adoption must depend on the people that perform the operations within government (Hofmann et al., 2012), there are few studies of public employees' adoption of e-government (Nripendra P Rana et al., 2013). From evaluation of 15 e-government initiatives, Ndou (2004) claims that a large barrier to e-government constitutes "the relationships, interactions and transactions between government and employees". Hofmann et al. (2012) argue from a literature review that "the benefits of e-government cannot be achieved when the inner structures of governments struggle to submit themselves to IT and organizational redesign". E-government is perceived as being voluntary by nature, which normally is a hidden taken-for-granted assumption, although it is sometimes explicitly stated (e.g. AlAwadhi & Morris, 2008). This means that researchers may be blind to the impact from coercive e-government. Further, E-government is primarily perceived as potentially positive (Heeks & Bailur, 2007), even though some critical researchers find that e-government may entail "political and administrative consequences that should not be overlooked" (Antonio Cordella & Bonina, 2012) and that the transformation of public sector by e-government "can be for worse as well as for better" (Bannister & Connolly, 2014).

Public sector organizations are characterized by serving multiple stakeholders with often conflicting goals (Caudle et al., 1978), dealing with a multitude of back-office systems with a high need for configuration (Rose et al., 2012) and interoperability issues (Bannister & Connolly, 2012). Irani et al. (2007) elicited practitioners' perception of challenges in e-government from workshops and claim that technology "tended to surface quite often as the creator of problems rather than a solution". Further, barriers to e-government has been found within legal, organizational, managerial and human issues (J. Ramon Gil-Garcia & Pardo, 2005; Ndou, 2004). Goldfinch (2007) reviewed a number of public sector IS projects and notes that even though technology performs as intended, it may not be used as intended or may not be used at all; productivity may even decrease. Luna-Reyes et al. (2012) state that "we still know little about the impacts and results associated with e-government". Heeks and Bailur (2007) find that most research is based on quantitative, cross sectional studies, which only to a limited degree provide in-depth understanding of e-government. Yildiz (2007) recommends more exploratory, longitudinal and qualitative studies of "the processes that shape the management of e-government", the "black box" of e-government and the relationship between local and national government. While it is recognized by some e-government scholars that impact from e-government may not always be positive, there is only limited critical e-government research (Heeks & Bailur, 2007; Myers & Klein, 2011).

Even though there are significant barriers to e-government both on the supply and demand side, numerous public e-services in various fields have been launched (Bannister & Connolly, 2012). Which strategy should governments apply if they want to prosper from e-government? Chircu and Lee (2005) find from empirical cases that civil servants to a high degree identify with their profession and less with doing things digitally and that mandated use "is one of the best things one can do to increase the likelihood of the [e-government] initiative's success". When e-government is voluntary, potentially negative impacts can easily be avoided. Many researchers are convinced about the widespread positive impacts of e-government and understand e-government as purely voluntary for citizens. Hence, they have been preoccupied by assisting governments profit from e-government, focusing on the various barriers to e-government and citizens adoption. Less scholarly concern has been put into the unanticipated or unintended negative impacts.

1.3 Theory and research question

Unanticipated negative outcomes from technology have been argued by Fountain (2001) to stem from the enacted technology that has been derived from the objective technology by organizational and institutional forces. This is conceptualized in the technology enactment framework (Fountain, 2001) and grounded in institutional theory (Scott, 2008). Institutional theory (new institutionalism) attributes institutional behavior to rely on rules, norms and cultural beliefs and emphasizes how organizations may undergo a process of isomorphism to attain institutional legitimacy aligned with the rules, norms and beliefs of the institutional field (Ibid.).

The thesis constitutes an explorative study of the negative impacts of the Danish national coercive e-government strategy. The enactment of the Danish e-government initiative of enforced public sector digital communication with citizens (Digital Post) constitutes the particular case. The negative impact from e-government is designated *e-government harm*, which the study aims to establish as a novel and necessary notion within e-government research. I suggests a conceptual model of *imposing e-government harm*, which is derived from the technology enactment framework (Fountain, 2001) and aims to contrast the enacting e-government success model (R. J. Gil-Garcia, 2012). The imposing harm model allows focus on different levels of harm, namely on individuals (civil servants, citizens), organizations and society

Research Question: Why is Digital Post perceived as harmful? How could this have been avoided and how is it mitigated in the future?

1.4 Methodology

This study applies a critical IS research approach (Howcroft & Trauth, 2005) to the Danish Digital Post e-government initiative, based on deep in-sight, critique and transformational re-definition. The study aims to explore e-government harm from different levels and perspectives, however based on principles from participatory design (genuine collaboration with practitioners, give a voice to the weak) and engaged scholarship (engagement with practice, recurrent dissemination of results to stimulate reflections and change). Empirical studies have been conducted in eight settings, applying different qualitative and quantitative research methods according to research perspective and purpose in the particular setting. E-government harm was explored from individual level (staff and citizens), organizational level, municipal level and national level.

1.5 Structure and reading guidance

The thesis is organized in a part 1 (cover) and part 2 (research papers). Part 1 is organized as follows: Chapter 2 describes the Danish e-government context and DP. The related work in chapter 3 covers three parts. First, the core elements of e-government research are described, being government(s), services, actors, technology and the major research streams. Second, e-government harm is about what is right and what is wrong, thus, ethics related issues must be included. Chapter 4 describes the research approach, namely engaged scholarship (Van de Ven, 2007), participatory design (Simonsen & Robertson, 2012) and critical IS research (Howcroft & Trauth, 2004). The empirical setting of the eight projects from which data are retrieved are presented in chapter 5 according to the modes of research perspective and research purpose (Van de Ven, 2007).

The findings about harm from DP on different levels are given in chapter 6, which constitutes the deep in-sight. Furthermore, the findings include a description of the organizational/institutional forces and the DP implementation strategy as areas where explanation of the

harm may be found. Chapter 7, discussion, constitutes the critique and transformation redefinition. I discuss the implications of the findings for practice and research. As critical researchers do not only criticize suggestions of how to ensure ethical responsible e-government are given in this chapter. Implications for research suggest the establishment of new research agendas on e-government harm, coercive e-government and ethical responsible e-government. Critical Research takes a critical stance towards the status-quo and taken-for-granted assumptions, and aims for a better society. Critical research, participatory design and engage scholarship share the assumption of research as value-laden, which requires the researcher to exert self-reflectivity while performing research, which is presented in chapter 8. Chapter 9 concludes the thesis relating to practice and research.

Part 2 contains the research papers. Paper 1 presents a follow-up on perspectives on the leading e-government research from the seminal e-government research review performed by Heeks and Bailur (2007). Paper 2 describes the adoption of DP in the 98 Danish municipalities from 2010 to 2013 and reveals indications of harm on organizations. Paper 3 describes the ethical dilemmas and potential harm of coercive e-government as perceived by managers and staff. Paper 4 primarily reports from a successful attempt to realize effects from an action research approach; but it further highlights the various barriers in DP adoption that lead to harm. Paper 5 describes results from two focus groups with clerical staff and reveals how staff report increased workload, decreased work life quality and harm to some citizens. Paper 6 reports that clerical staff find that DP changes service towards citizens both positively and negatively. Paper 7 aims to establish an ontology and epistemology of coercive e-government, e-government harm and e-government ethics as novel and crucial e-government related constructs.

I have decided to translate Danish names, where they have a meaning, instead of just displaying the Danish name. For instance, the national eID is called *NemID* in Danish, (nem (Danish) = easy (English)), thus, I decided to display it as *EasyID* to preserve the effort that the Danish government has put into establishing the discourse of digitization as *easy*. The various writings of ‘Digital Post’ with initial letter both as upper and lower case requires a comment. *Digital Post* (upper case initial letter) and *DP* designate the *system*, while a *digital post* (lower case) is the *message* that is delivered through the system. From the sender to the recipient, the content can have different modes, which is distinguished by using message, digital post and physical mail/letter. The public institution sends a message through DP that can result in either a digital post to the citizen or a physical mail/letter, i.e. message covers the entire communication flow independently of how the message is delivered.

The PhD-study has been conducted while Digital Post was being implemented in all public institutions and being forced on citizens, thus a very dynamic empirical setting. During the three years from 2012 to 2014, public institutions have matured; the technology around Digital Post has improved and citizens have become used to Digital Post. The dynamic setting has offered a lot of rich data and it has been difficult to stop collecting data. The unstable environment, however, may also be a challenge to the dissemination. To all the institutions, employees and citizens that have actively fought for Digital Post and subsequently harvested the fruits of more efficient and flexible processes, my version of the evolution may not seem just. My intention, however, has been to maintain focus on the unintentional harm from e-government. I have chosen to base the study on empirical findings rather than document analysis. A description of the technology, thus, will not result from the reading of system requirements, but rather from experiences of how the technology appeared in practice.

BACKGROUND

2.1	Danish e-government	11
2.2	Digital Post.....	12
2.2.1	Digital Post functionalities	13
2.2.2	Operation of Digital Post.....	15
2.2.3	Digital Post and e-Boks	20
2.2.4	Public organizations´ operations	21
2.2.5	Certified Mail Systems	24
2.2.6	Law, regulations and administrative guidance	25
2.2.7	Vulnerable citizens	27

2 Background

2.1 Danish e-government

E-government in Denmark builds on central registers of core data (persons, buildings, and companies) already established in the 1950's and 1960's (Henriksen, 2012) and has been centrally driven through national strategies since 2001 from the Ministry of Finance. Digital services have mainly been voluntary for public institutions, citizens and companies. This has changed little by little as it is recognized politically that e-government savings realization demands mandatory internal activities and mandatory external services. Highlights from e-government development are given in table 1.

Table 1 Danish e-government 2001 - 2015 (inspired from The Danish Government et al., 2011)

2001-2004, digital collaboration	2004-2007, internal digitization and efficient payments
Digital signature for citizens and employees	Digital invoicing to public organizations (mandatory)
Citizens may send e-mail to public organizations	Digital payment to citizens (mandatory)
Public organizations may communicate digitally	Standards for case handling systems in central government (FESD) (mandatory)
	National public service portals for companies (Company.dk) and for health (Health.dk)
	Secure e-mail between public organizations
2007-2011, shared infrastructure and one point of access	2011-2015, the digital path to future welfare
Single sign-on for public services	Mandatory objective welfare administration in order to improve efficiency by centralization of administration of welfare services (Payment Denmark)
National register of income for citizens and companies	National register of welfare services for the disabled
National register of welfare services for the elderly	National register of welfare services for vulnerable children
Digital self-registration of company information (mandatory)	National administrative system for vulnerable children
National eID (EasyID)	Every citizen and company has to have a Digital Postbox (mandatory)
National public service portal for citizens (Citizen.dk)	Public organizations communicate digitally with citizens and companies (80% goal)
Secure e-mail system for citizens and companies to be used in communication with public institutions (Digital Post)	All citizens and companies use self-services on the Internet (80% goal)
Every public institution has to have a Digital Postbox (mandatory)	70+ public citizen services becomes mandatory digital
	Central distribution of national core data to public institutions (mandatory)

The Danish Digitization Agency claims that Denmark is one of the leading countries for e-government (Fribo, 2013b) and displays the key achievements on their website (see figure 1).

Local governments have to maintain a variety of systems including enterprise systems (budget, finance, payroll, HR, e-procurement, case-handling system, DP, office-systems, e-mail), systems for administering the various welfare services (library, daycare, healthcare, unemployment benefits, education, building permits etc.) and systems for smaller tasks often involving third parties (e.g. system for driver's license and passport involving police and GPs, system for ordering eye-wear involving opticians and GPs etc.). A local government runs 2-300 systems with interfaces to a broad variety of external and internal parties in a very complex organizational context. A study of managerial challenges in 11 Danish municipalities describes the challenges like this (Rose et al. 2012):

Local authorities are required to interact with a bewildering array of stakeholders, including several ministries (...), parliamentary commissions (...), local authority organizations (...) and IT suppliers (...). It follows that the work of municipality managers in regard to e-government is not simple. They must respond to a wide variety of demands, initiatives and strategies, in a complex network of relationships (both internal and external), with equally complex accountabilities. They must remain within frameworks established by law and regulations, whilst responding to the demands of politicians and (...) citizens. They must maintain and develop large portfolios of systems and services (...). They depend on a variety of IT

suppliers in an emerging market. They must, together with colleagues with diverse specialisations, drive digitalisation through this landscape of complexity, indifference and occasional resistance or hostility (...) (Rose et al. 2012, pp 6-7).

A study of realizing organizational benefits in Danish e-government points to three areas of challenges, namely processes and structures, projects and management (Pedersen & Hansen, 2010). The study finds weak and problematic relations between IT and business, where the IT department dominates the collaboration and the business unit is perceived as having to low IT maturity and managers lack IT skills and visions. Furthermore, cross-domain projects have little priority even though the organization may benefit more from these projects. Furthermore, IT projects are decided independently of resource allocation and generally with no resources available for unexpected events. More IT projects are launched than the organization can handle and business units don't allocate the necessary resources for IT projects. Finally, the study finds that many projects don't emerge from local needs but from central government decisions.

Citizen e-readiness is high in Denmark (see figure 1) and has been for many years. Citizens, however, have been slow to adopt e-government. Local Government Denmark (LGDK) found that only 3% of the population were frequent e-government users in 2011 ((LGDK, 2011).

<p>Communication, Digital Post Of 4.7 million citizens aged 15+ 3.1 Million citizens registered 0.5 Million citizens exempt 4.2 Million messages from pub. sector (Sep. 2014) 45.000 messages to pub. sector (Sep. 2014)</p>	<p>Citizens IT readiness 91% of age 16-89 has Internet 86% of age 16-89 use the Internet weekly 53% af age 65-89 use the Internet weekly 78% of age 16-89 has sought information on public websites (2013) 62% af age 16-89 has used public web forms (2013)</p>
<p>National portal, Citizen.dk 11.7 Million transactions (Sep. 2014)</p>	<p>National eID, EasyID 4.7 Million citizens has an active account EasyID has been applied more than 2 Billion times</p>
<p>E-government strategy Of the 75 initiatives decided (June 2014) 36 has been completed 27 are running as planned 12 needs attention</p>	<p>International ranking 38% of citizens has broadband access (Rank 3, OECD 2011) 81% of citizens has communicated online (Rank 1, EU 2011) E-government readiness, rank 4 (UN 2012)</p>

Figure 1 Key achievements of the Danish e-government strategy, the Danish Digitization Agency web site, November 2014

A qualitative study of local e-government reveals five major reasons for citizens not to use e-government services (Skaarup, 2011), namely lack of insight into the domain or the situation, lack of digital competences (mainly due to e-government services not following commonly known design), lack of communication competences, the need for trust in the process (e.g. an application is dealt with in the right manner) and the need for trust in that a case handler as the expert takes the case to the next step.

With the 2011-2015 digital strategy the Danish Government has launched some ambitious goals for digitization. A broad variety of mandatory public sector self-services towards citizens is to be implemented by 2015. Taxpayers' money will be spent on IT-projects that affect the majority of public services and will have far-reaching consequences for citizens' everyday-life, whether having to register your child in kindergarten, renew your passport, using the library, or cancelling that week's cleaning for an elderly person.

2.2 Digital Post

This study is about the impact of DP. DP can be characterized as a Certified Mail System (CMS) that enables public organizations to communicate digitally with citizens. This section

describes the various aspects of DP that is necessary to take into account in order to understand the impact. This includes the basic functionalities, how DP is operated by the public employee and by the citizen and the enterprise architecture that DP is embedded in. Furthermore, DP constitutes computer mediated communication, which implies that more than technological aspects need to be taken into account, including attributes of the communication and the citizen as the recipient of the communication. Finally, the influence that the legal and regulatory framework surrounding the use of DP has on the impact from DP.

2.2.1 Digital Post functionalities

The Danish government launched DP in 2010 with the aim of reducing postal costs, see the enterprise architecture of which DP is a part in Figure 2.

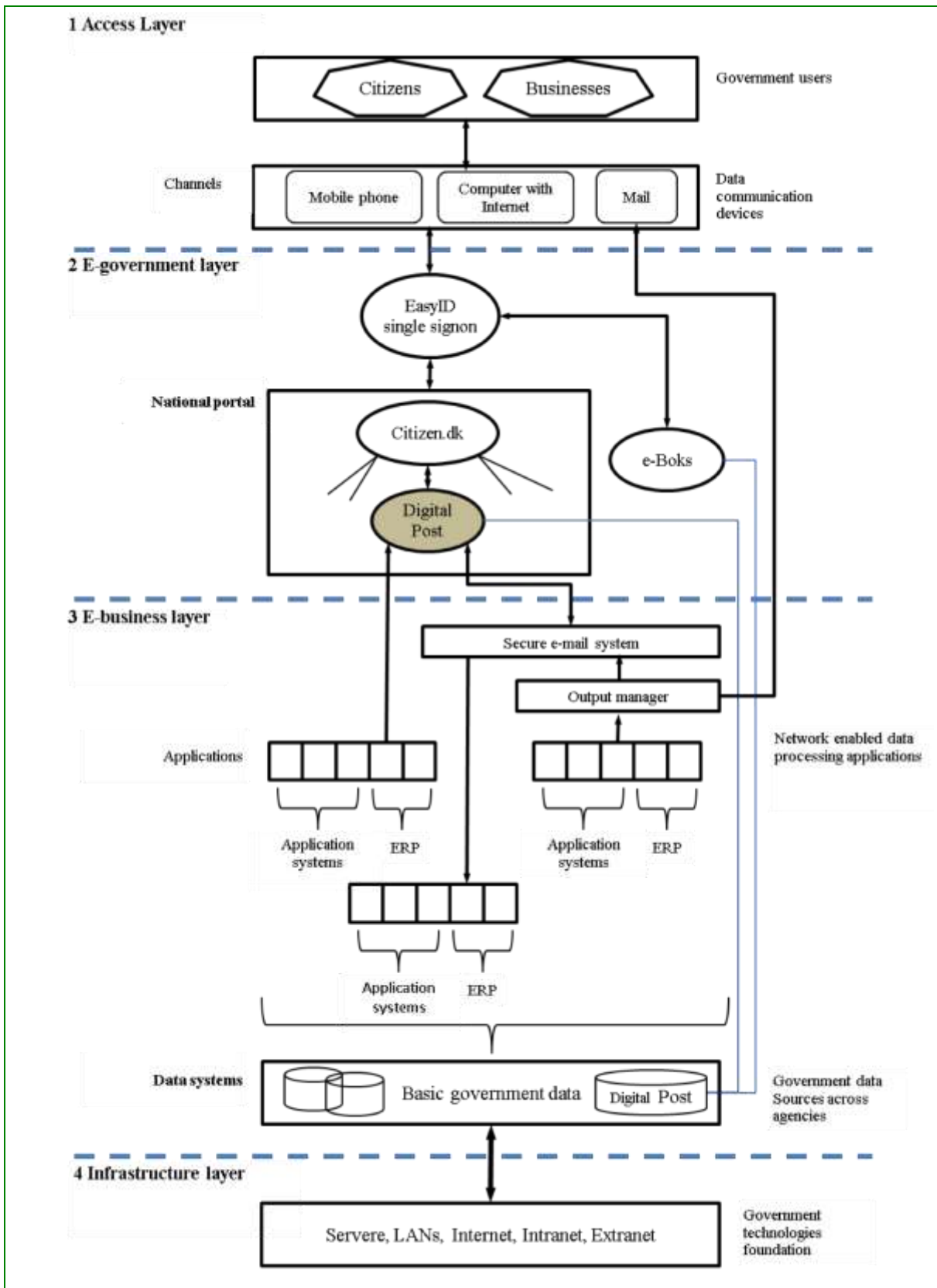


Figure 2 The Digital Post enterprise architecture (after Ebrahim & Irani, 2005)

The DP enterprise architecture may be described according to the e-government enterprise architecture approach by Ebrahim and Irani (2005). The citizens enter the service through the access layer, which includes the communication devices and communication channels. DP was only accessible by computer with web browser and Internet connection until 2014, when it became possible to access DP by smart phones. Citizens may access DP through computers in public libraries or at municipal citizen centers. Through the access layer, the user can connect to the E-government layer. At this layer, DP is integrated into the national public e-service portal, Citizen.dk that is accessed through the national eID, EasyID, using the social security number (CPR) and a passcode. Until 2014, EasyID was based on Java, which demanded frequent software updates in the access layer. Citizens send digital post to public institutions through an 'Address book' in DP. The Citizen may also access DP (in another user-interface) directly from the DP service vendor, e-Boks.dk. The interface resembles an e-mail client with a Sent box and an Inbox. The E-business layer includes the various applications and data. The digital post from a citizen is received in the e-mail client in the public institution (e.g. Outlook), in an application system (e.g. the unemployment benefit system) or an enterprise system (e.g. the case handling system). Public organizations send digital post to citizens in various ways. Public organizations can write to citizens directly from application or enterprise systems or manually through an output manager system through a secure email system. Application systems may be systems that are used in every situation where the citizens may receive a letter, e.g. the various welfare benefits systems (sick leave, unemployment, disability aid etc.) or systems related to other domains (the physical environment, health, education etc.). When sending a message to the citizen, the output manager distinguishes whether the citizen is a DP user or not. If the citizen has joined DP, the message is sent as digital post, if not, the message is sent as a physical mail.

2.2.2 Operation of Digital Post

E-government services rely upon an authentication process. It may only be possible to enter into binding arrangements if the certainty of the identity of the persons or organizations involved is high (Tauber, 2011). It is not mandatory to obtain an EasyID. However, public authorities can decide that e-services can only be accessed by EasyID. All the e-services in Citizen.dk, including DP must be accessed by EasyID, i.e. in practice, it is mandatory. 4.27 million citizens, which is 91% of the Danish population aged 15 and older has EasyID (November 2014). Using EasyID requires the CPR and a personal password. The citizen is prompted for an access code to enter. The access codes are provided either as a free carton access code chart or a paid token (see figure 3). Access codes can only be used once. When the access codes on the code chart are used, the citizen automatically gets another by the mail or needs to buy a new chart if the 200 codes have been used "too quickly". The legal rules for obtaining the EasyID states that the citizen decides a password, which must not be written down, thus must be remembered. The password may not be given to other persons. The access code chart must be protected from access by other persons and may not be copied, scanned or digitized. Finally, the citizen must agree that the EasyID will only be used on a computer with Internet browser and other software that has been updated with the latest security updates.

CPR is regarded as sensitive information by the Danish Data Protection Agency. Hence, public institutions may not expose CPR, neither digitally nor on paper, and consequently, text messages that contain CPR may not be sent by public institutions in a non-secure manner. The citizen needs to enter login, password and access code through the keyboard. DP has not been designed to forward messages to other citizens within DP or to forward to a non-secure e-mail account. Moreover, operations to print or save digital post to local media are troublesome. Citizens may register an e-mail address where an alert can be sent to, on arrival of a digital post.

This alert only carries the name of the public institution that sent the message and a static standard message connected to the public institution (figure 9).

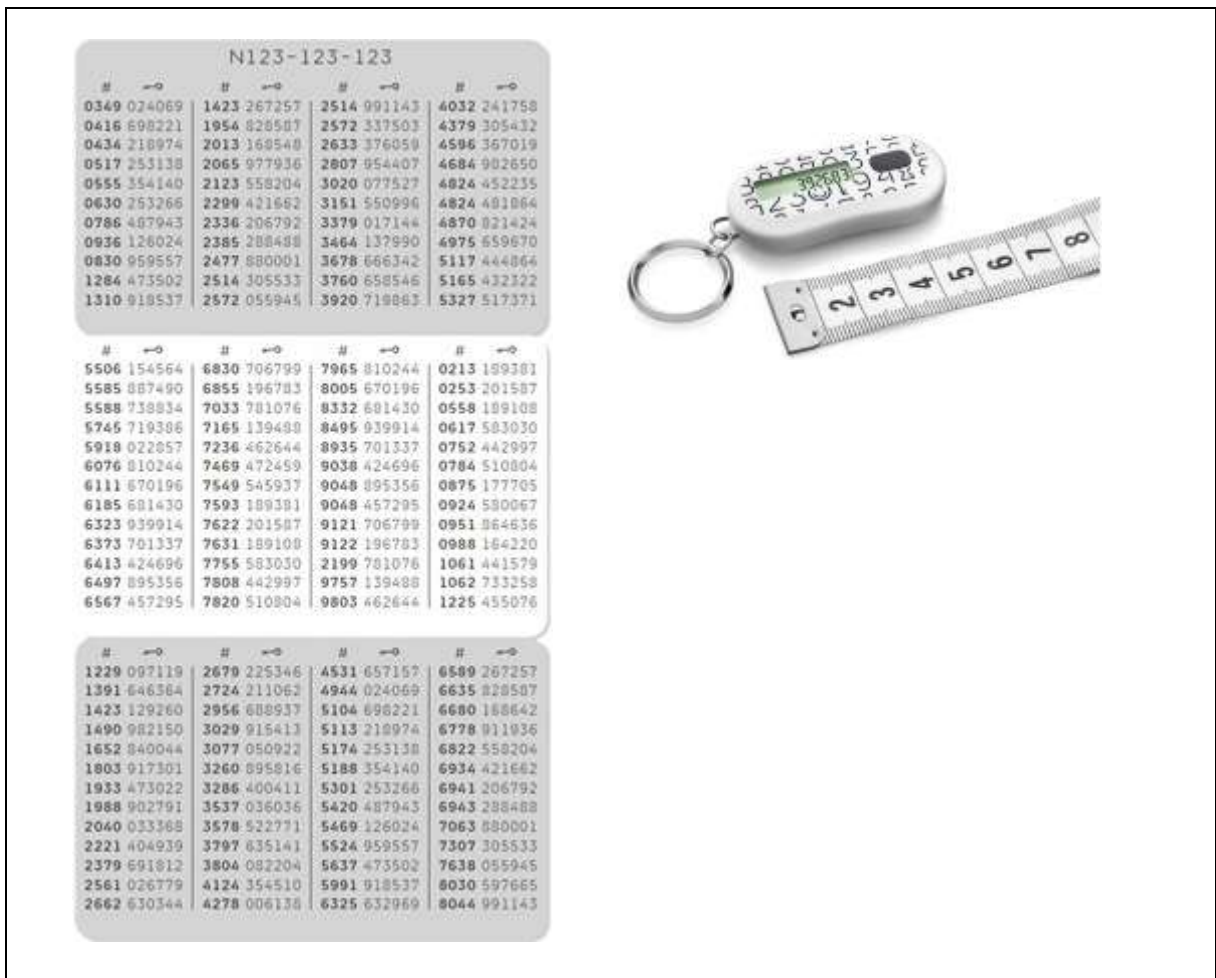


Figure 3 National eID, EasyID, access code chart and token

Citizens access DP through the national citizen portal Citizen.dk (figure 4). When the citizen clicks on ‘Digital Post’, this activates the single sign-on to the EasyID (figure 5), where the citizen enters her CPR as login and a self-chosen password. The access code (from an access code chart or from a token) is entered (figure 6, token mode) and the DP in-tray can be accessed together with folders that are known from e-mail systems (figure 7). The public sector and the financial sector share the use of the EasyID. The financial sector, however, has chosen to offer customers an easier logon. If customers only need to access information and not enter information, customers may logon only using first level security (figure 5) and don’t need to use access codes (figure 6). Public sector does not offer this possibility for easier logon.

DP includes an address book for citizens to initiate communication with public institutions (figure 8).



Figure 4 National citizen portal, Citizen.dk



Figure 5 EasyID first level login with CPR and password



Figure 6 EasyID second level login with access code

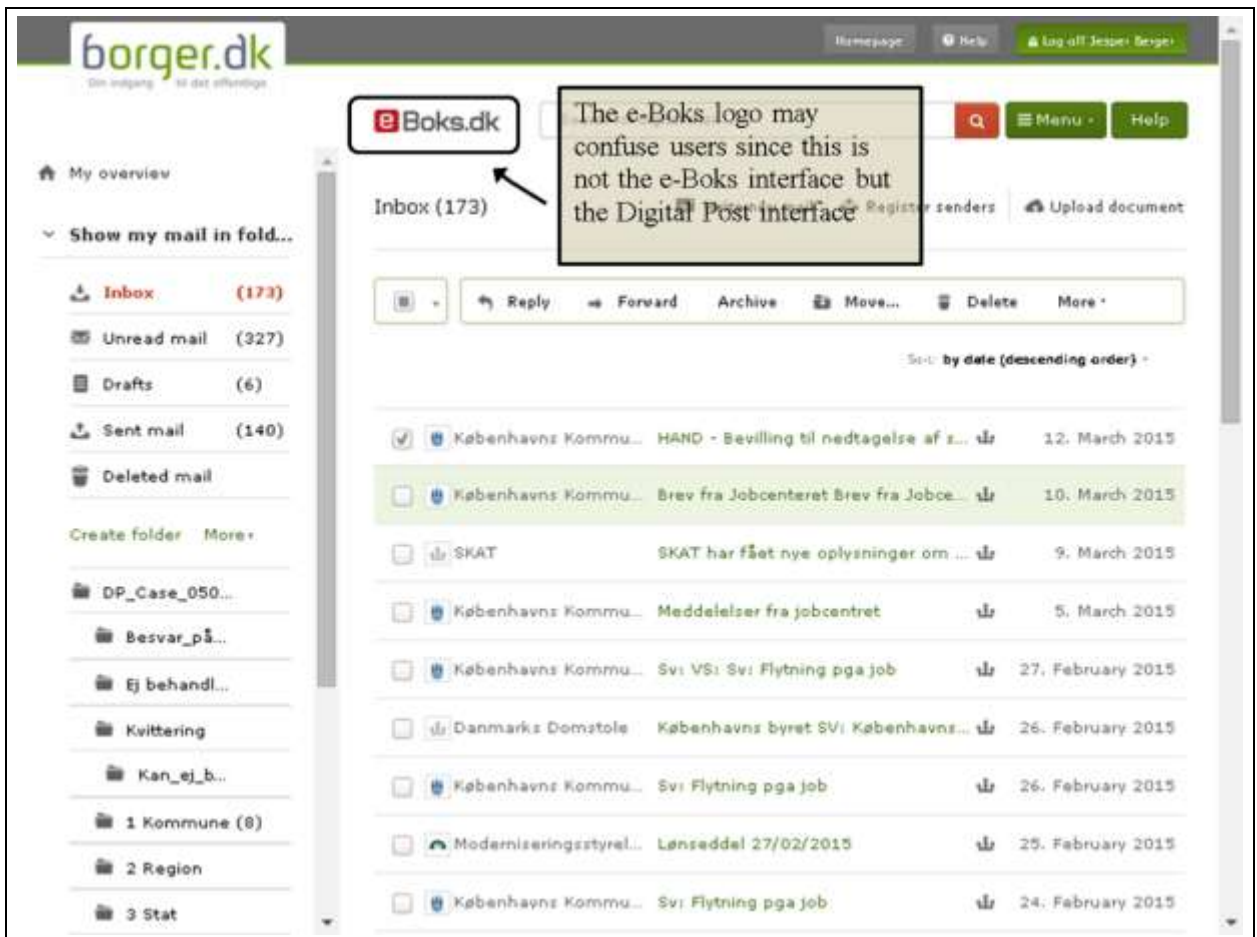


Figure 7 Digital Post in-box

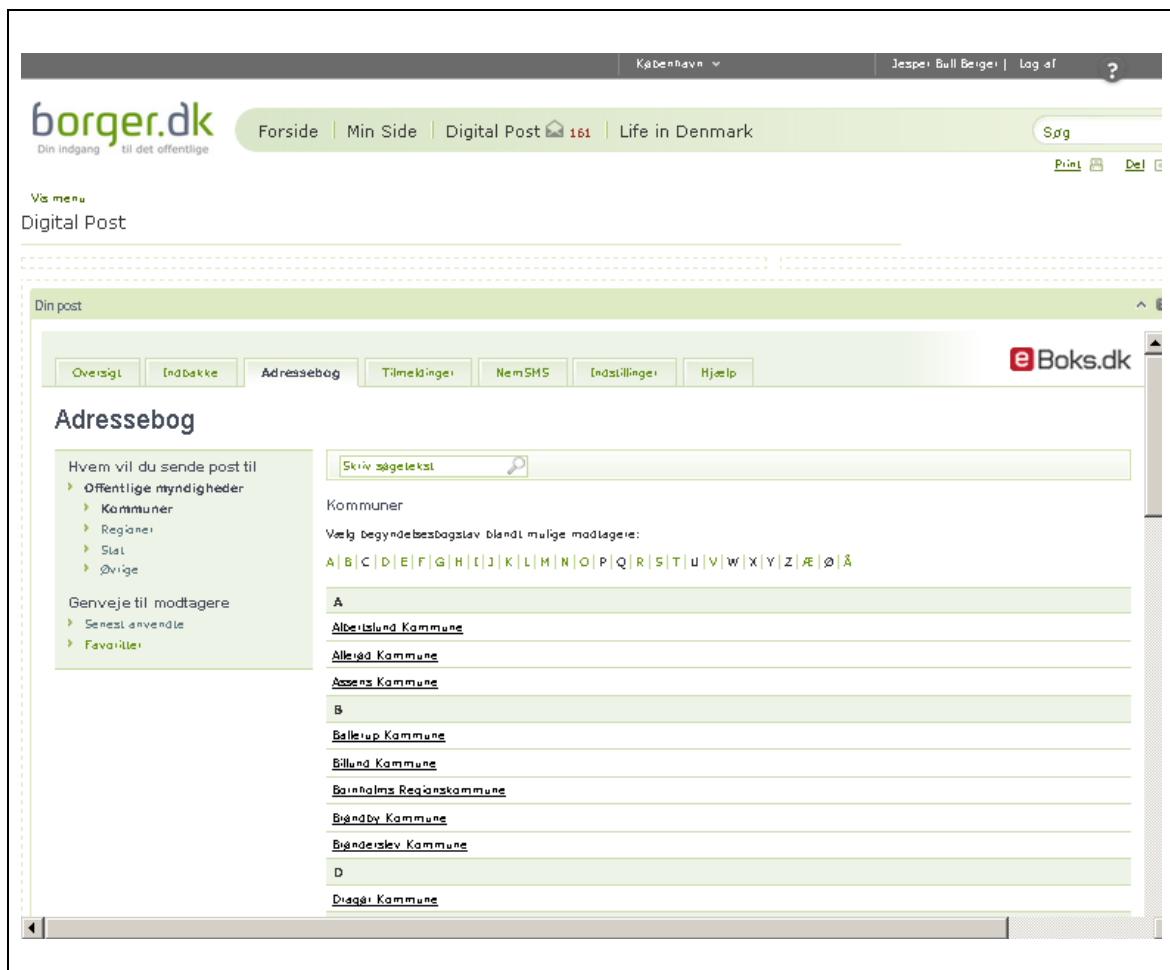


Figure 8 Digital Post address book

You have received a new digital post from public sector

Hi <Name of citizen>

A new mail has arrived for you from:

<Name of sender>

Login at Digital Post or e-Boks to read your mail.

It is important that you read your mail because there may be documents you need to react upon within a certain deadline.

You can see your mail on your smart phone. ...

Kindly, e-Boks

(English translation)

Du har fået ny digital post fra det offentlige

Hej Jesper B. Berger

Der er kommet ny post til dig fra

SKAT

Log på Digital Post eller e-Boks for at læse din post

Det er vigtigt at du læser din post, da der kan være dokumenter, du skal reagere på inden for en tidsfrist

Du kan også se din post på din mobil. Hent gratis app på adressen m.e-boks.dk/da/en eller søg på "e-Boks" i App Store, Google Play eller Windows Phone Store

Med venlig hilsen

eBoks.dk
Leverandør af Digital Post

The name of the sender is the only information from the digital post that is displayed in the e-mail alert (here the Tax Agency (Skat))

Figure 9 E-mail alert from Digital Post

2.2.3 Digital Post and e-Boks

DP is developed and operated by the private company e-Boks. E-Boks has been operating a CMS called e-Boks since 2000. The system was used by the banks, insurance companies, power companies etc. that relied upon communication with many citizens and with a high volume. Citizens could register to receive digital communication instead of physical mail. The Ministry of Finance decided that all 135.000 State employees should receive their monthly payslip via the e-Boks. Other big public institutions like the Vacation Fund (one or more yearly letters that all working citizens receive) and some of the biggest municipalities also used e-Boks in their communication with citizens. E-Boks was, thus, known by some citizens and public employees before DP. Essentially, e-Boks and DP are two different interfaces to the same information. Originally, e-Boks did not offer the ability of citizens to respond to or initiate a message to the companies. This feature was included in the DP tender; however, it was also integrated in e-Boks when it was developed for DP. When registering in DP, the citizen had to accept (or not) that messages were synchronized between the two 'systems', allowing citizens to access messages from public institutions in the e-Boks interface. If citizens overlooked this option or for some reason did not have the same trust to the private company e-Boks as to the State and would not allow synchronization, the two interfaces would not allow the same access. The e-Boks interface (figure 10) resembles the DP interface. The display of the e-Boks logo in the DP interface (figure 7, p. 18) was part of the negotiations between the Ministry of Finance and e-Boks.

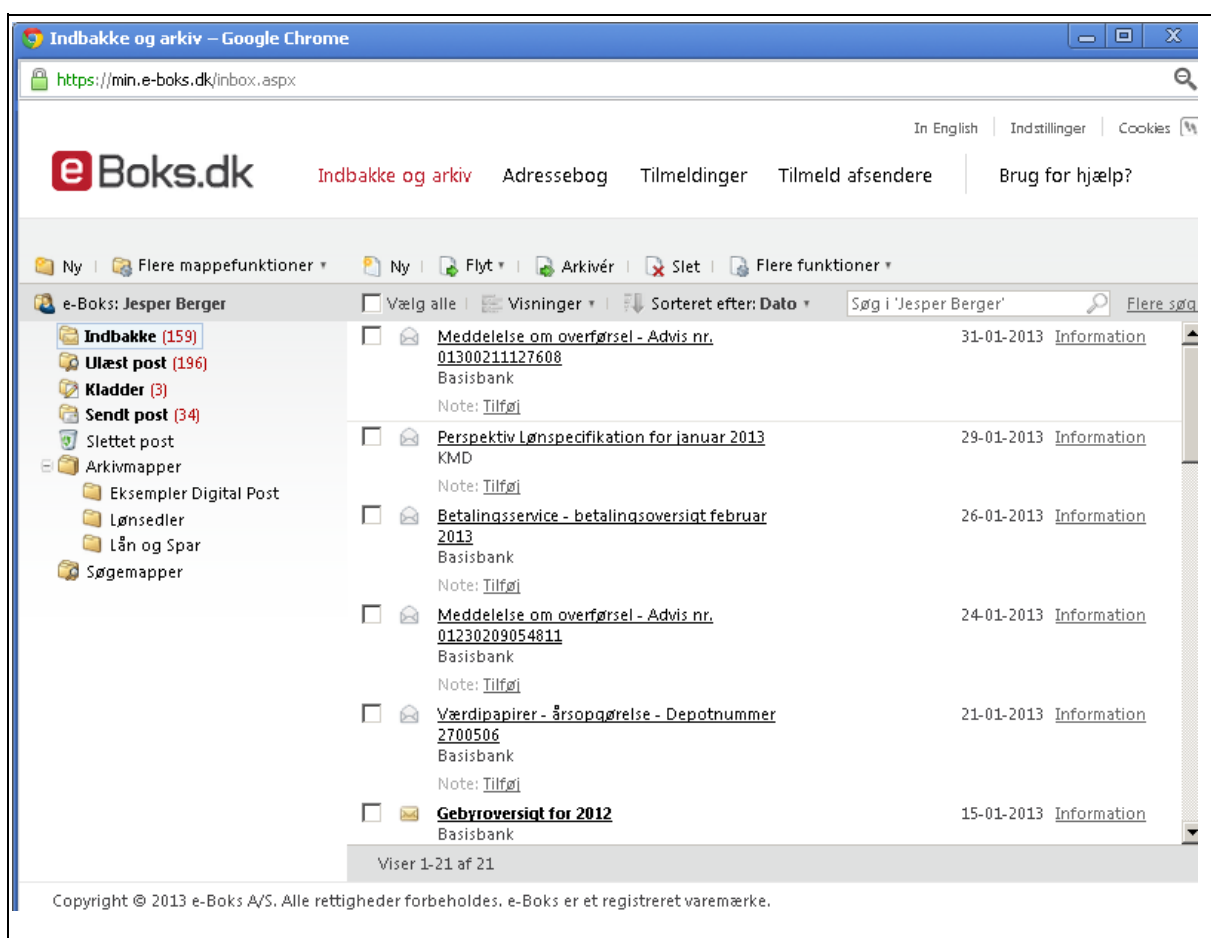


Figure 10 The e-Boks interface

2.2.4 Public organizations' operations

Public employees operate DP in various ways. When DP was launched in 2010, no receiver systems were integrated with DP other than Outlook, i.e. staff see the digital post as an e-mail even though it is not an e-mail, but a digital post message, received as e-mail. Depending on how public organizations configure their secure e-mail system and Outlook, the employee may receive the digital post embedded in an e-mail from the secure e-mail system (figure 11) and they need to open this e-mail to get access to the actual message from the citizen, which is attached (figure 12). Figure 13 shows how a digital post is received in a case handling system, which was only possible in 2014.

Public institutions can answer digital post from citizens in different ways. Digital post can be answered directly from an application or ERP system if the DP integration has been developed. This integration has only emerged in some systems in 2014. DP can also be answered from Outlook. When the employees answer a digital post from Outlook, they may need to manually add some codes in the 'To' field (depending on the secure e-mail system, for instance '££[[Digital Post]]') or use a different button than normally used when sending e-mails, depending on the configuration of the secure e-mail system and Outlook. Digital post cannot be answered as regular non-secure e-mail. If the wrong button is used, the answer will seemingly have been sent, no 'bounce-back' message is received by the employee.

Digital post can be sent to citizens directly and automatically from application systems, but the integration must be developed from DP to every application system, unless they can draw on a common output manager bus (but this is not operational currently). This integration was a very early development from the system to handle reminders for payment of property tax. Digital post can also be initiated manually from application systems. Figure 14 shows how digital post is sent from a system to administer sick welfare benefits.

When public employees need to initiate a digital post to a citizen they can do it through an output manager application. Figure 15 displays the interface of the output manager from KMD (doc2mail) that had been used by all the municipalities until alternatives emerged from 2012. Doc2mail accounted for 90% of the volume in 2010, dropping to 74% in 2012 and 59% in 2014. Employees can also use the output manager to send digital post to citizens from an application system that is not integrated with DP. In that case they need to print from the application system to the output manager and the print will result in an attachment to the digital post, see figure 15. Until 2012, it was not possible to print directly to the output manager and employees had to print as PDF from the application system and attach the PDF manually.

The output manager can only be used to send digital post but not receive or answer. The advantage of the output manager is that it can be used to send messages to citizens that receive digital post or physical mail at the same time. The Outlook functionality that can be used to answer can also be used to initiate a message, but only to citizens that receive DP.



Figure 11 Received digital post as attachment in secure e-mail

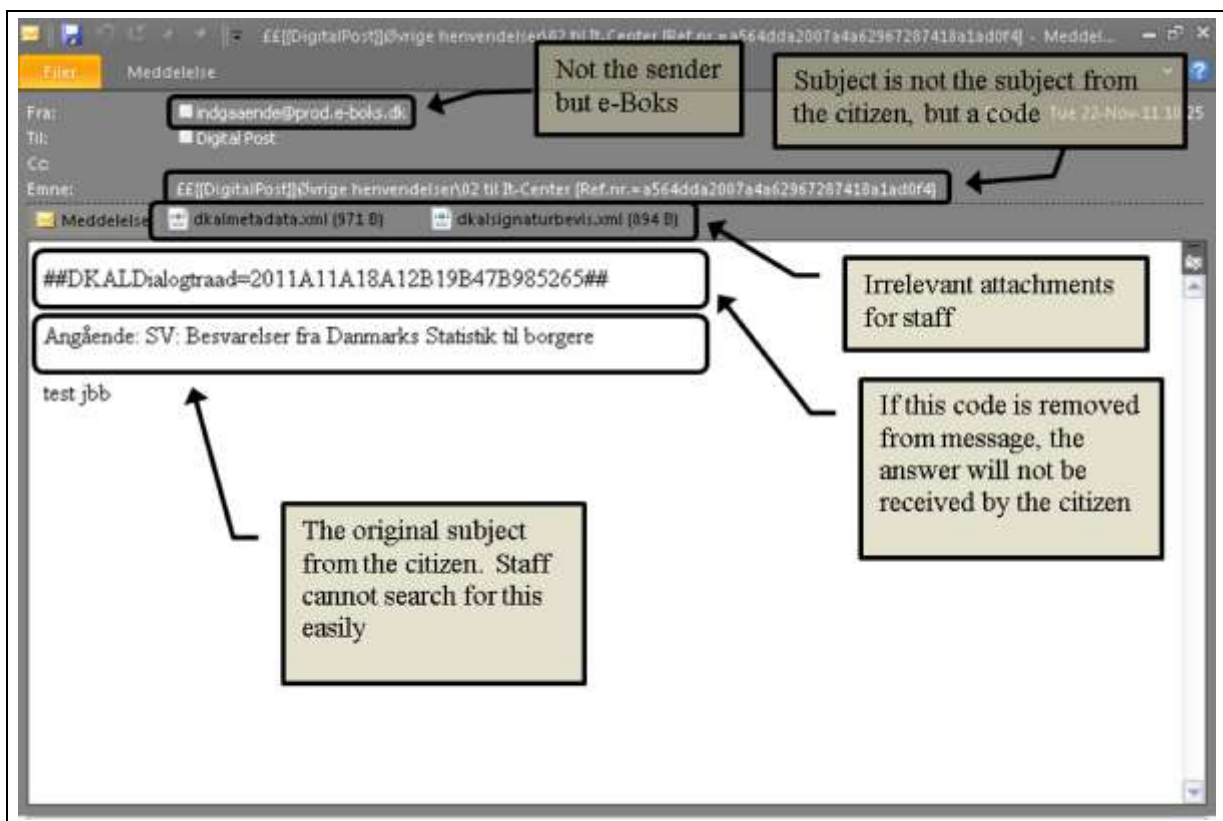


Figure 12 Received digital post as an attachment to secure e-mail

Overskrift: Afhentning af pakke - slet mig

Dokument vedr.: FritL. Jesper B. Berger

Dokumenttype: Indgående

Medie/kanal: Digital post

Dokumentnr.: 563-2013-26059

Sagsnr.: EDH Dokument

Dato: 05-06-2013

Fristdato:

Generelt | Parter | Historik | Sager

Oprettelse

Oprettet d.: 19-07-2013

Oprettet af: BGDPOST

Filtype: htm

Skanner arbejdsplads: FAKAPP202D

Skannet af: SYSTEM

Jobnr.: 1241312

Dok.nr. i kørsel: 9

Dato	Beskrivelse	Ændret til/ændring vedrører	Sagsbehan...	Sagsbehandlernavn	Tid	Af
23-08-2013	Dokument åbnet for læsning	V. 1	BGSOJH	Janni Mosgaard Ha...	09:21:16	JMH
23-08-2013	Dokument åbnet for læsning	V. 1	BGSEGP	Gurli Joan Poffler	09:19:48	GP
19-07-2013	Sag tilknyttet fast	563-2013-93	BGSOJH	Janni Mosgaard Ha...	13:23:51	JMH
19-07-2013	Dokument modtaget		BGSOJH	Janni Mosgaard Ha...	13:23:24	JMH
19-07-2013	Ansvarlig sagsbehandler ændret	563 JMH Janni Mosgaard Hansen	BGSOJH	Janni Mosgaard Ha...	13:23:24	JMH
19-07-2013	Øvrige dokumentopl. ændret		BGSOJH	Janni Mosgaard Ha...	13:23:24	JMH

Figure 13 Received digital post in ERP system (case handling)

Dokument1 - Microsoft Word

2002650447 - Henrik Fischer - Deltag - eDagpenge System Ver.4.0.98.2

Filer | Funktioner | Vis | Hjælp

Sagsoplysninger

Kommune: 429

Sagsnummer: 27111

Revurderingsfristpunkt: 31-05-2014

Modtager (liste 1)

Modtaget Type: 27-11-2014 Anmeldelse

Arbejdsforhold | Løn og refusion

Sagsoplysninger

Dagpengeområde:

Kategori:

Udbetalingsperiode:

Fortægnelsesårsag:

Pension:

Deltagsoplysninger

Sagsart: 11 af

Fraværsårsag:

Ophørsårsag:

Kontrolstatus: 05-12

Brevbestilling

Brevområde/Brevtype

Brevområde: Afgørelsesbrev

Brevtype: KUN refusionsårsag - Delvist afslag på SDP-refusion pga. for sen anmeldelse (DP305)

Sagsbehandler mv.

Sagsbehandler: Mona Løns

Underskriver: Mona Løns

Modtager

Arbejdsgiver

Firmanavn: BREKI SHIP SERVICE APS

Kontaktperson:

Adresselinje 1: Størmgade 1

Adresselinje 2:

Postnr, by: 5330 HUKKEBO

Evt. Land:

Journal

Journaloverskrift: Afgørelsesbrev udsikret: Sag 27111401/1. SE 33882238

Journaltekst: Der er den 02.12.2014 udsikret et afgørelsesbrev med delvist afslag pga. for sen anmeldelse (DP305)

Supplerende oplysninger

Afslagsbrev (max 500 tegn):

Printindstillinger

Lokal print

Centralt print (*)

Digital post (*)

*) Ved bestilling inden kl. 14:30 afvikles brevet samme dag

Printvariant: Normal brevbestilling

Klædbrevbrev

Antal eksemplarer: 1

Printadresser: P2t

Bestil

Luk

Hjælp

420 Assens → ASSENS K DOMOLI 02-12-2014 13:22

Figure 14 Digital post initiated from application system (sickness welfare benefits)

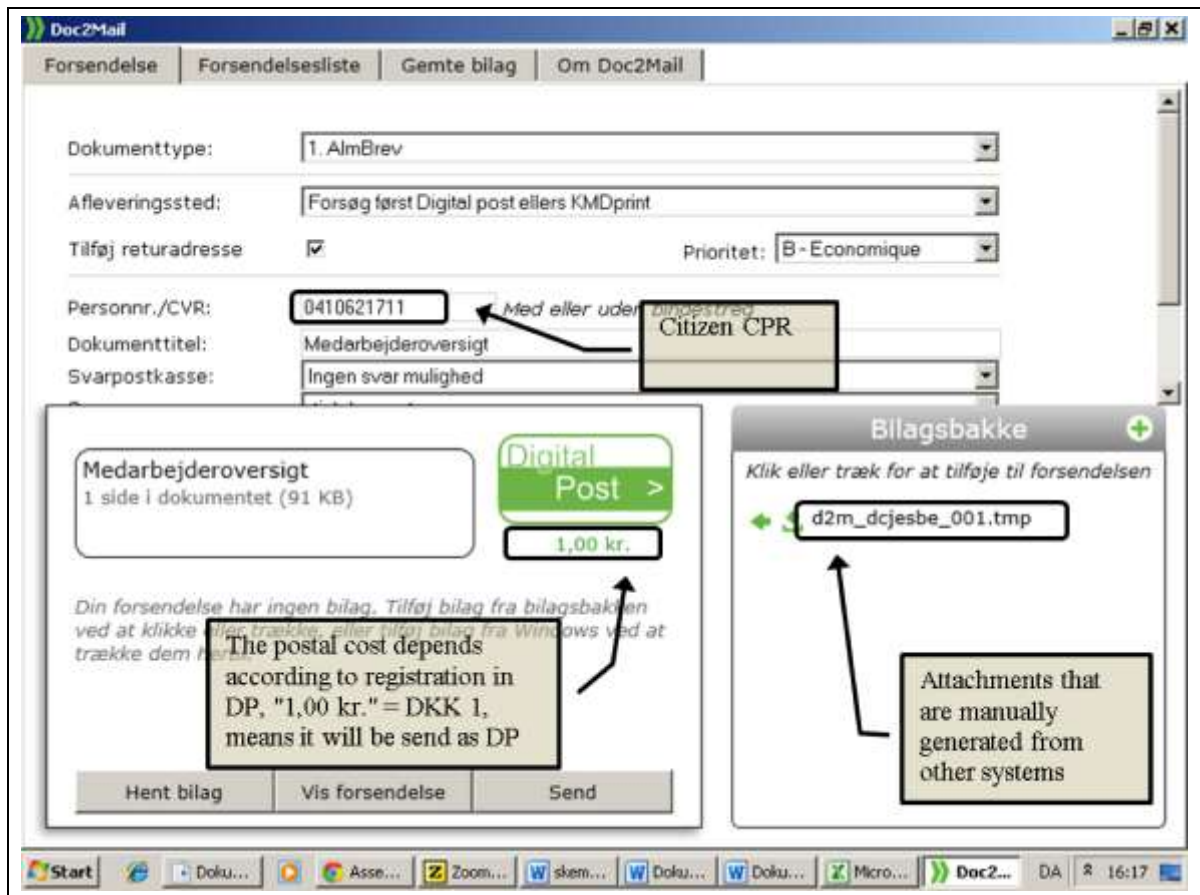


Figure 15 Digital post initiated from output manager

2.2.5 Certified Mail Systems

Systems that are supposed to substitute for traditional mail must resemble the functions of traditional mail. What are the functions of traditional mail? The mail is handed to the mail company by the sender. The sender trusts the mail company to deliver the mail to the recipient. If the recipient cannot be found, the sender trusts that the mail is returned to the sender. The sender trusts that the mail company does not read the content of the mail. As a recipient, we trust that we receive all the mail that is sent to us and that it has not been opened. The sender is assured by the mail company that delivery is due on a specific time if the mail is sent within a given time. The mail company puts a time stamp on the envelope. In the case of a value mail, we might use registered mail. Registered mail provides more features than basic mail handling. The sender gets a receipt from the mail company while sending the mail; the receipt covers the sending time and the recipient name. The sender can track the mail, i.e. when it leaves the mail company, when it is delivered etc. The recipient must identify himself and sign in order to receive the mail. The sender trusts that the mail will be delivered and is received by the intended recipient. The traditional mail system constitutes an infrastructure to handle the physical delivery and the administration of the registered mail, namely a set of commonly agreed upon services (the delivery of mail, a sender receipt etc.) and the mail company.

Systems that are introduced to substitute physical mail are called Certified Mail Systems (CMS). Tauber (2011) describes the attributes that are normally expected of CMS's. See table 2 for recommended attributes and a comparison to attributes of DP.

Table 2 Recommended attributes of Certified Mail Systems (CMS) compared to Digital Post

Attribute	Explanation	Digital Post	Compliance
Non-repudiation of origin (NRO)	Is provided if an evidence of the origin is generated and sent to the recipient	An ordinary e-mail and text alert exists for the citizens. However, this functionality was not stable until 2014 and citizens have difficulties activating them. It is not supported for public institutions	(+)
Non-repudiation of receipt (NRR)	Is provided if an evidence of having received the message is generated and sent to the sender.	Not supported for the citizen nor for the public institution	-
Non-repudiation of submission (NRS)	Is provided if an evidence of a message being submitted is generated and sent to the sender.	A copy of the message is placed in the citizen's Sent box. It is unclear, whether the copy of the message in the Sent box depends on successful submission. This depends on the system that delivers the message from the public organization and is not normally provided	(-)
Non-repudiation of delivery (NRD)	Is provided if evidence of a message being delivered is generated and sent to the sender.	Is not supported for the citizen nor for the public organization	-
Evidence transferability	Is provided if evidence can be used independently by sender and recipient without the need to request input from others.	Partially supported regarding NRO, not supported regarding NRS	(+)
Fairness	No participant in the communication should have more advantages after the communication process. NRR and NRO are provided.	Is not supported. Citizens can send messages to public institutions that they don't know of. Public institutions can send messages to citizens that they don't know of	-
Confidentiality	Only sender and recipient has access to the content of the message and end-to-end encryption.	Is not supported and meta data on the envelope may change	-
Data integrity	Ensures that every data modification (e.g. on the envelope) can be detected.	Is not supported	-
Authenticity	Ensures that the sender and the recipient are who they say they are.	This supported for citizens and some public organizations but not for all	(+)

2.2.6 Law, regulations and administrative guidance

As already mentioned, all public institutions were obliged to respond to digital post from the citizens from 2010, when the system was launched. Early in 2012, only 21% of citizens had registered to DP. The Danish parliament approved the “Public Digital Post” law in June 2012 (The Danish Minister of Finance, 2012). The law was approved by all parties except the most left wing party and the most right wing party. A legal Notice of, amongst other aspects, exemption was issued by the Minister of Finance in March 2014 (The Danish Minister of Finance, 2013). The Danish Digitization Agency published a guide to the legal Notice to the local governments (The Danish Digitization Agency, 2013a). The essential (adjusted) formulations from law are given in figure 16 and from the legal notice on exemption in figure 17. Further, the use of digital post is regulated by rules connected to the EasyID. The DP law makes DP mandatory for citizens from 2014. The citizen has the responsibility of having a valid eID and of getting access to a device with the necessary software, which can run the national citizen portal and eID. Public libraries and municipal citizen centers offer access to computers and Internet access. The DP law also states that a letter from a public institution is regarded as legally received; hence, legal discharge is applied. When the digital post is sent from the public institu-

tion, the citizen has the responsibility to ‘empty the postbox’ and must bear the legal consequences if not.

<p style="text-align: center;"><i>Aim</i></p> <p>The scope is digital communication in the Public Digital Post solution between public senders and persons and legal entities that are registered the solution. Persons and legal entities are been registered after §§3 or 4 and it entails that public senders have the right to send digital communication to those registered with the legal effects that follow from §10</p> <p>...</p> <p style="text-align: center;"><i>Compulsory registration</i></p> <p>§ 3. Physical persons aged 15 or above and are resident in Denmark, must be registered Public Digital Post unless the person is exempt. Legal entities must be registered in Public Digital Post unless the entity is exempt.</p> <p style="text-align: center;"><i>Voluntary registration</i></p> <p>§ 4. Persons or legal entities that are exempt may voluntarily register in Public Digital Post. Until § 3 goes into effect, the persons or legal entities that voluntarily register in Public Digital Post are subject to the same legal effects stated in § 10.</p> <p style="text-align: center;"><i>Exemption</i></p> <p>§ 5. The Minister of Finance lays down the rules for exemption. The exemption is decided by the municipal council for persons and by the Minister of Business and Growth.</p> <p>...</p> <p style="text-align: center;"><i>Application</i></p> <p>§ 7. Public authorities may apply Public Digital Post in the communication with persons and legal entities. The Minister of Finance publishes in Public Digital Post, which authorities that applies to, as Public Digital Post sender</p> <p>§ 8. Physical persons and legal entities may apply the solution in the communication with public senders. By communication is understood all documents and messages, including decisions.</p> <p>...</p> <p>§ 10. Messages that are sent with Public Digital Post are regarded as received when they are accessible in the solution by the recipient and regarded as sent by the stated authority. The Minister of Finance is authorized to decide the date of entry into force of §§ 3 and 4.</p> <p style="text-align: center;">---</p> <p style="text-align: center;"><i>Issue</i></p> <p>The Minister of Finance issued the mandatory registration for companies to 1. November 2013 and for citizens to 1. November 2014.</p>
--

Figure 16 Law about Public Digital Post (The Danish Minister of Finance, 2013)

<p><i>Exemption</i></p> <p>Citizens can be exempt due to cognitive disability, functional disability, inability to understand Danish, and lack of access to a computer in the home or poor broadband reception. Citizens who wish to be exempt must appear personally at the town hall, show identification and complete an application, stating that one of the reasons for exemption applies. The public employee decides whether the application is granted. The exemption is intended to be temporary for two years. The Legal Notice states that “[b]efore the decision [of exemption] is taken, the local council offers help and guidance in order that the person may be able to access his mail in Digital Post instead of being exempted” (p. 8). The citizen that has been granted exemption is automatically registered in Digital Post after two years if a new application has not been approved.</p> <p><i>Application form</i></p> <p>(the application form displays § 163 from the Criminal Law 3 times)</p> <p>Anyone who for use in legal matters of concern to the public, in writing or in any other readable media gives false statement or testifies to something that the person has knowledge of, are punishable by fine or imprisonment for up to 4 months.</p>

**Figure 17 Notice of Exemption (The Danish Minister of Finance, 2013)
and exemption application form (The Danish Digitization Agency, 2014)**

The Digitization Agency has issued guides for public institutions. The guide for exception states that “according to the Digital Post law, the public senders have a right – but not an obligation – to send messages to physical persons through Digital Post with the legal effects stated in § 10 of the law (...), the right to send messages to citizens and companies entails that a citizen that has sent an e-mail to a public authority cannot demand to receive the answer via regular e-mail (...). Likewise, the public authority can answer a physical letter from a citizen through Digital Post. This is also valid if the citizen specifically has requested to be answered

by a physical letter.” (The Danish Digitization Agency, 2013a, p. 2). Further, about exemption, the Agency reminds the local governments that “[t]he grounding principle for the compulsory registration in Digital Post is that anyone that can, must receive their mail in Digital Post.” and that is why the public employee in the local government that handles the exempt application - before the application is granted – must offer “relevant help and guidance that enables the citizen to be a recipient in Digital Post instead of being exempted” (Ibid., p. 8). About the exemption being temporary, the Agency states that “[t]he temporary condition is grounded in the fact that some of the reasons for exemption are of temporary character, for instance language barriers or access to a computer with Internet access” (Ibid., p. 10).

The rhetoric in the law, in the Notice and in the guidance to the public employees is very hard and rigid and every aspect has been tightened. The imbalance between citizen and the public sector is clearly stated. The citizen *must* receive digital post, the authorities *may* send digital post, the citizen *cannot* demand either digital or physical post, but must receive communication through whichever channel the authority applies. Further, the Minister of Finance forces every citizen requiring exemption to attend the town hall to fill out an application form to be exempt from digital post, and if that is not enough, the civil servant must – while the citizen is there at the town hall – convince the citizen *not* to be exempted.

The Ministry of Finance and Local Government Denmark (LGDK) elaborated a business case, covering the 98 municipalities, in 2012 (LGDK, 2012). The parties agreed that the state funding of the 98 municipalities should be reduced from 2013 and beyond according to the anticipated saved direct municipal costs of stamps and envelopes. Local governments could keep the reduced indirect costs (saved time). This was included in the yearly negotiations in 2012 of local government funding (The Danish Government & Local Government Denmark, 2012).

Table 3 Reduced state funding to local governments (The Danish Government & Local Government Denmark, 2012)

Year	2013	2014	2015
Reduction in state funding (DKK Million)	103	131	244
Estimated number of DP (Million)	17.6	25.3	42.1

The agreement of reduced funding was grounded in the law about Public Digital Post (The Danish Minister of Finance, 2013). The agreement states that “[i]n an effort to relocate the communication between public institutions, citizens and companies to digital solutions, the government has presented the bill on Public Digital Post (L160)” (Ibid., p. 20) and “The government and Local Government Denmark agree that L160 about public digital post contributes to relieve [DKK] 547 Million in 2015. Of these, postal costs and costs for postal material amount [DKK] 103 in 2013, 131 in 2014 and 244 in 2015, which will be reduced in local government state subsidies.” (Ibid., p. 35)¹. The state funding is reduced according to number of citizens in the local government.

2.2.7 Vulnerable citizens

Vulnerable citizens may be the elderly and citizens on public welfare. There are a little more than one million elderly citizens (age 64+) in Denmark (22% of the potential DP users). The citizens on welfare benefits (apart from old age pension) which amounts to almost another million (20%), which is distributed on insured unemployed (2%), sickness benefits (8%), cash benefits (4%), early retirement pension (5%) and the institutionalized (<1%). The non-western migrants account for 7%, which adds to the more than 40% of the Danish population that may

¹ The technical assumptions are given in table 14, p. 116.

potentially be negatively affected by e-government. See appendix A. This section covers the elderly as the largest group due to a recent examination of the digital readiness of this group. Further, this section reports from an investigation into, which citizens do not logon to DP, thus may suffer from the legal consequences of not seeing important messages. This investigation covers part of the group of vulnerable citizens other than the elderly. Around 5% of the total population did not check their DP.

The elderly

TNS Gallup (2014a) interviewed 15 local government employees from organizations for the elderly to describe how the elderly coped with DP. They found four segments of the elderly citizens, namely the self-propelled, the comfort seeking, the anxious and the incapable, see figure 18.

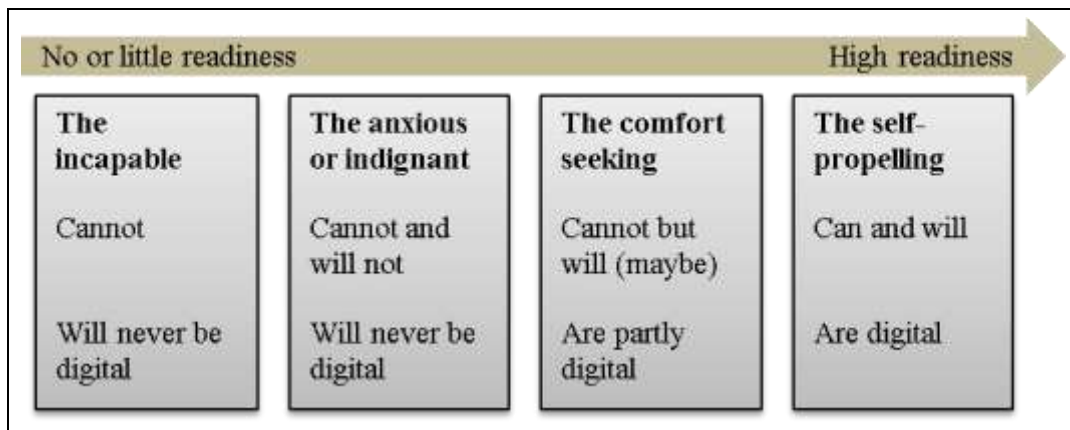


Figure 18 Segments of the elderly citizens (TNS Gallup, 2014a)

The *self-propelled* are digital, they can and they will, age 65 to end 70s. They travel a lot, are extrovert, they take education courses and are curious. They often possess a computer, tablet and smart phone. Have used a computer throughout their working life and can operate and maintain the computer, without being a super user. They use the computer for various things and are not afraid of e-commerce. Challenges may be updates and the installation of a new application. They try to do it themselves first and then consult with family or people in their networks. They find it natural to communicate with public sector digitally and use self-services.

The *comfort seeking* are 70+ and constitute a broad group. They may have both computer and tablet, but find it easier to use tablets due to bigger icons and operation by hand. They use the Internet for certain things as searching for a recipe, handling e-mails, getting in contact with the grand children on social media banking and DP. They don't feel safe with financial transactions on the Internet. They don't really understand computers and are not comfortable with downloads, updates, installation or external devices such as printers, scanners etc. They are confused by the technical language and the use of English. Their computer actions are memorized rather than grounded in logic and comprehension. New actions will require new learning, which they cannot derive from existing experience. The resulting anxiety and insecurity towards any consequences make them search for help very quickly instead of trying it themselves. They are able to see the convenience in digital communication but prefer face-to-face communication. Digital communication with public sector entails feelings of insecurity. They depend on guides to self-services and EasyID.

The *anxious and indignant* are 75+. The authors find two groups of people, namely the indignant that will not have anything to do with technology and are convinced that public sector must serve the citizen. The other group is those who are frightened has and have great fear of technology. They feel protected by the public sector as the same time as they fear public servants. Typically, they don't possess any technology but if they do, it was a gift and is not used, or it is an old desktop computer. If they have EasyID, it is because of a requirement from their bank or because a relative has insisted. They don't use it and have forgotten the password. They have never used a computer and the whole technology environment is perceived as very new and overwhelming; they feel alienated towards technology and only want personal contact with public sector officials. Challenges are twofold; practical (how does the mouse function? Where are the letters on the keyboard?) and emotional (feel stigmatized, alienated, humiliated, angry and anxious).

The *incapable* are 80+. They are not functioning well (dementia, disability etc.) and depend on health care. They neither possess nor use technology. Others communicate for them.

Citizens that do not logon to Digital Post

244.000 citizens did not logon to their DP from September 2014 to February 2015, which amounts to 5% of the population².

Figure 19 shows the age distribution of citizens that did not logon to their DP³. On average nearly 6% of the registered DP citizens did not see their DP. The overrepresented age groups are the young (age 15-24, 8%), the youngest of the elderly (age 75-84, 8%), and the oldest of the elderly (age 85+, 22%).

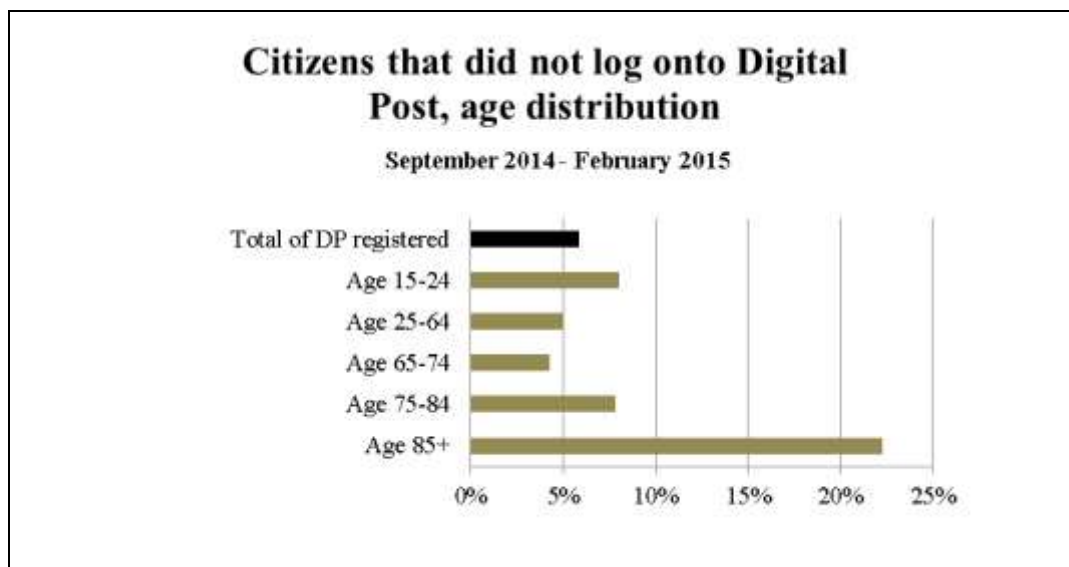


Figure 19 Awareness of Digital Post, age groups

Figure 20 shows the percentages of citizens that didn't log into their DP during the period, according to citizen origin, educational level and two public benefits types receivers. There was an overrepresentation of citizens amongst non-western migrants, lower educated and beneficiaries (cash benefits and early retirement pension). The Digitization Agency records that 87% of registered DP users have established an e-mail or text alert. Only 30% of the citizens that did not log onto their DP had established an alert.

² Data was provided from the Digitization Agency to the author (private e-mail, 11. March 2015).

³ The percentage is calculated against the number of those registered in DP.

Citizens that did not log onto Digital Post, socio-demographic distribution

September 2014 - February 2015

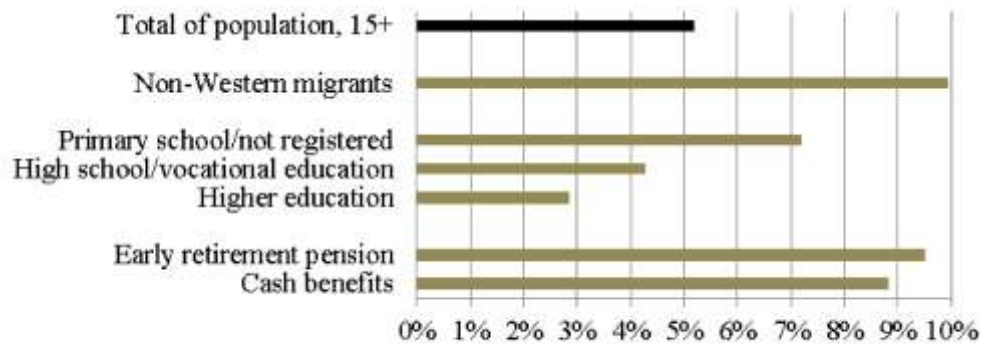


Figure 20 Awareness of Digital Post, socio-demographic data

RELATED WORK

3.1	E-government.....	33
3.1.1	Government	34
3.1.2	Services	36
3.1.3	Citizens and employees	40
3.1.4	Infrastructure	41
3.1.5	Evolverment.....	42
3.1.6	Individual Adoption.....	47
3.1.7	Barriers	50
3.1.8	Effects.....	52
3.1.9	Mandatory e-government	53
3.1.10	Negative impact from e-government.....	53
3.1.11	Digital communication	54
3.1.12	E-government ethics.....	58
3.2	Deficiencies in e-government research	64

3 Related work

E-government may be defined in various ways and e-government scholars often declare that there is no common definition. However, leading e-government research articles – inferred from the content of the articles – treat e-government as the *provision of public sector services to citizens through the internet* (paper 1). Following this, related work must stem from e-government research, which since the mid 1990's has grown into a mature research field with a considerable number of publications every year, a total of more than 6.500 publications (July 2014) and an increase of more than 10% every year for the last three years, 7 international journals and 3 recurring yearly conferences (Hans. J. Scholl, 2010a; H. J Scholl, 2014). The e-government field grew out of recognition that IS research on the one hand did not perceive technology as different in the public sector domain from the private sector and, on the other, that public administration research (PA) did not deal with technology issues in public administration. According to Heeks and Bailur (2007), the quality of e-government research is low stemming from the origin of the field, thus “[e]-government research is therefore in a poor state: viewed as the offspring of information systems and public administration, it is the child of two parents that are themselves perceived as intellectual weaklings” (Ibid., p. 261). Moreover, and which needs to be taken into account, Bannister (2010) notes that technology use and administrative issues in public organizations were examined long before the rise of e-government as a research field and the problem is that “much of this work (...) is not perceived as e-government, but as something different.” (Ibid., p. 34). My study relates to and aims to advance the e-government research field, however, this section also draws on research from IS and PA.

In the following subsections, I present the components of e-government (government, services, actors, and technology), the major streams of e-government research (evolvment and adoption) and the specific issues that are relevant to my research question (effects, negative impact, coercion and ethics). I close this chapter by displaying what I believe are the gaps in e-government research in relation to this study. The related work does not claim to be comprehensive but aims to describe the e-government field and justify my research question by revealing significant e-government research gaps. Major themes of e-government are described by leading e-government research and, when possible, contrasted by examples of scholarly work with alternative views.

My literature review was initiated in 2012 by reading the 50 most cited e-government research papers (see methodology in paper 1), which gave an overview of the field and major authors. The literature review for the theses was conducted as an iterative approach relying on the major scholars (by citation), backward and forward search (Webster & Watson, 2002); and further themes (e.g. ‘mandatory e-government’) and scholars related to the research question (e.g. critical e-government researchers).

3.1 E-government

E-government scholars state that there is no commonly accepted definition of e-government (R. J. Gil-Garcia, 2012). From a literature review of the most cited e-government research, we found that only 3 of 5 papers stated some sort of definition in the article (paper 1). The definitions vary from “the use of the Internet to deliver [public] services and information to citizens and businesses” (Reddick, 2004) to the more comprehensive understanding that involves all use of technology in public sector, for instance “e-government is or should be a broad concept that includes socio-technical aspects of the selection, design, implementation, and use of any kind of information and communication technology in government, from fax machines and mainframe computers to complex websites, Web 2.0 tools, social media, and open government

applications.” (R. J. Gil-Garcia, 2012, p. 1). Some scholars attribute e-government to be prescriptive; to “promote more efficient and cost-effective government, facilitate more convenient government services, allow greater public access to information, and make government more accountable to citizens” (Wescott, 2001), to achieve “better government” (Verdegem & Verleye, 2009), to “empower citizens through access and use of information” (AlAwadhi & Morris, 2008) or to “increase democracy” (Evans & Yen, 2006). In parts of the research field notions of citizens’ consultation, participation or delegation of decision power is designated *e-governance* or *e-democracy*. Chadwick and May (2003) defined three government views of the relation with the citizen, namely a *managerial view*, where citizens are viewed as something that only could and should be managed. E-government, is perceived as a means to achieve more efficient government. Second, a *consultative approach*, where government consult with citizens and finally, the *democratic approach*, where government delegate decision power to citizens. The authors examined political strategies from the US, the U.K. and the EU and found that the strategies were heavily reflected by the managerial view (Chadwick & May, 2003). From the leading e-government research, we found the managerial approach in 49 of 50 papers, moreover, we saw no empirical studies of *e-governance* (even though half of the papers referred to democracy in some ways).

E-government scholars in practice include technology, services, government and some actors in e-government. E-government is commonly seen as governments having relationships to a range of actors, which may be supported or performed by technologies. These relationships have been known as G2C (government to citizen), G2B (government to business), G2G (government to other government entities) and G2E (government to employee) (Hans. J. Scholl, 2010b). G2C, G2B and G2G are supposedly obvious; G2E, however, may require an example. G2E occurs when the civil servant uses technology to perform a task as employee, for instance register working hours.

3.1.1 Government

E-government may be delineated by analyzing the public sector as an onion-model (Bannister, 2010). In the core are central government and the ministries (State departments). The central government decides the policies with guidance from the ministries. Denmark has currently 18 ministries. The ministries ensure that the decided policies are operable and control that they are being applied. The ministries can execute independently or delegate. In the second level of public sector are the agencies. Agencies perform their duties within a specialized function; they respond to a ministry but can be very autonomous. There may not be a clean cut between what constitutes a part of a State department, an agency or an entity within the agency. Denmark has around 90 agencies. While State departments have limited direct contact with citizens or businesses, the agencies may have direct interaction with primarily businesses but also citizens. The third level of government constitutes the local political level. Denmark has two levels, namely counties (5) and local government (98). Both levels have political elected councils but only the local government has tax collection authority.

The division of responsibilities between the different levels of government varies from country to country. In Denmark, the counties are primarily responsible for the operation of the health care sector outside of peoples’ homes. Local government in Denmark has the primary responsibility for the public affairs with citizens. The fourth level of government comprises the wider public sector. This layer includes the particular institutions that respond to one of the former layers. The wider public sector in Denmark includes for instance the universities and museums, the local courts, the police districts and the local church administrations at state level; the hospitals at regional level and primary schools, day care institutions and homes for the elderly at local level. At the fifth and last level are the public commercial companies that are owned by

one of the government levels. In Denmark this mainly covers infrastructure for instance SAS (airline), DSB (rail), DONG (energy supply) but also cultural institutions as DR (national media) and resources at the local level for instance Vestforbrændingen (waste management owned by 18 local governments) and HOFOR (drinking and waste water management owned by 8 local governments). All the public organizations in all the levels perform operations that are supported by technology, hence, may qualify to be included in the notion of e-government. A list of services may serve as to intuitively promote the e-government term. (inspired by *Ibid.*):

1. Paying taxes, citizens
2. Marriage registration
3. A citizen advice web page
4. Making a building application
5. A facility to hire a public football pitch for a game
6. Paying taxes, businesses
7. A facility for businesses to report their annual accounts to the state
8. A new courts system for processing driving license penalty points
9. A new reservation system for the state airline
10. A new police crime control computer system
11. A new laboratory control system in a public hospital
12. A new command and control system for the military

Intuitively, as Bannister states, it is easy to agree that the top of the list constitutes e-government initiatives and that the activities at the bottom of the list may not be e-government. But where to draw the line is not always so clear. In this study, e-government is understood as public services to the citizen via the internet, which infers that the first four are e-government initiatives, the rest are not. Number 5 indicates that it is a group of people that require the service and not a citizen, 6-7 are services dedicated to businesses and 8-12 are internal IS projects. This study is concerned with the implementation of new technology in the operations with citizens and how this affects the municipality, the employees and the citizen.

Some scholars state that e-government researchers tend to focus only on the citizens' interaction through the application interface, hereby neglecting the back office systems and operations that enable the service to the citizen. In fact, Bannister states that "e-government is, or should be, about all use of information technology in public administration, whether publicly visible or not" (*Ibid.*, p. 36). This is in line with R. J. Gil-Garcia (2012). My study includes the back office systems and operations that enable the application interface to operate, however, it only includes these back office activities if they are connected to the visible service hereby disregarding what would be called internal systems and operations. The delineation of e-government depends on the research scope. This study considers the third level, i.e. the local governments and the core (1. level).

E-government research attracts focus on 'governments' in a somewhat volatile and conceptual manner (Bertot et al., 2010; Schuppan, 2009) as the central government, or the public sector as such. or as an organizational entity, either at the level of an agency (e.g. A. Cordella & Iannacci, 2010) or at local government (e.g. Lemuria Carter & Weerakkody, 2008). Only a few studies have been found that consider the relationship between levels of government, for instance between central and local government. One study suggests a local e-government framework (Nurdin et al., 2011) of how national government and citizens impact local government.

Other factors of influence have been designated as environmental factors (Donald F. Norris & Moon, 2005). A few studies include the special institutional forces of the public sector (A. Cordella & Iannacci, 2010; Fountain, 2001; Luna-Reyes & Gil-Garcia, 2011). Demographic characteristics of public institutions have been included to examine the antecedents of e-

government service provision (Coursey & Norris, 2008; Moon, 2002). Studies of how e-government may depend on the functional characteristics of the public organization have not been found. E-government may be different in the agency of courts than in the agency of environmental protection. The same could be argued about the local government level. E-government in the technical domain (city planning, building permits etc.) may be different and have different implications for stakeholders from e-government in the department of service for the elderly.

It has been widely accepted amongst e-government scholars that the collaboration between public sector organizations are included in the e-government notion, this has been coined as “joined-up government” (e.g. Irani et al., 2007) and is reported as being one of the major barriers to e-government mentioned by practitioners (ibid.).

3.1.2 Services

Services are an integral element of the e-government definition. It appeared in the vast majority of the reviewed leading articles (paper 1). What types of e-government services have been put forward? Drawing on survey results from more than 1.300 CIOs in US counties and local governments, (D. F. Norris & Reddick, 2013) display two types of services; informational and transactional.

**Table 4 Provided services from US counties and local governments
(D. F. Norris & Reddick, 2013)**

Information and communication	Transaction-based services
Employment information/applications	Online payments of fines/fees
Online communication with individual elected and appointed officials	Online delivery of local government records to the requestor
Geographic information systems mapping/data	Online payments of taxes
E-newsletters sent to residents/businesses	Online completion and submission of permit applications
E-alerts	Online completion and submission of business license applications/renewals
Streaming video	Online property registration such as animal, bicycle registration etc.
Video on demand	Online voter registration
Mobile apps	
Customer relationship management	
Interactive voice response	
Podcasts	
Moderated discussions	
Instant messaging	
Chat rooms	

From a ‘life-event’ perspective, the European Commission (2012) surveyed around 28.000 citizens in EU. The self-reported use of 19 services, which was defined around life events, was from 35-75% in the sample. These results supplement the types of services from Norris and Reddick because they cover all levels of government. Regarding the Danish public sector, declaring taxes is central government level, moving and changing address is municipal level and reporting a crime or using the library are the wider public sector (level 4), see figure 21.

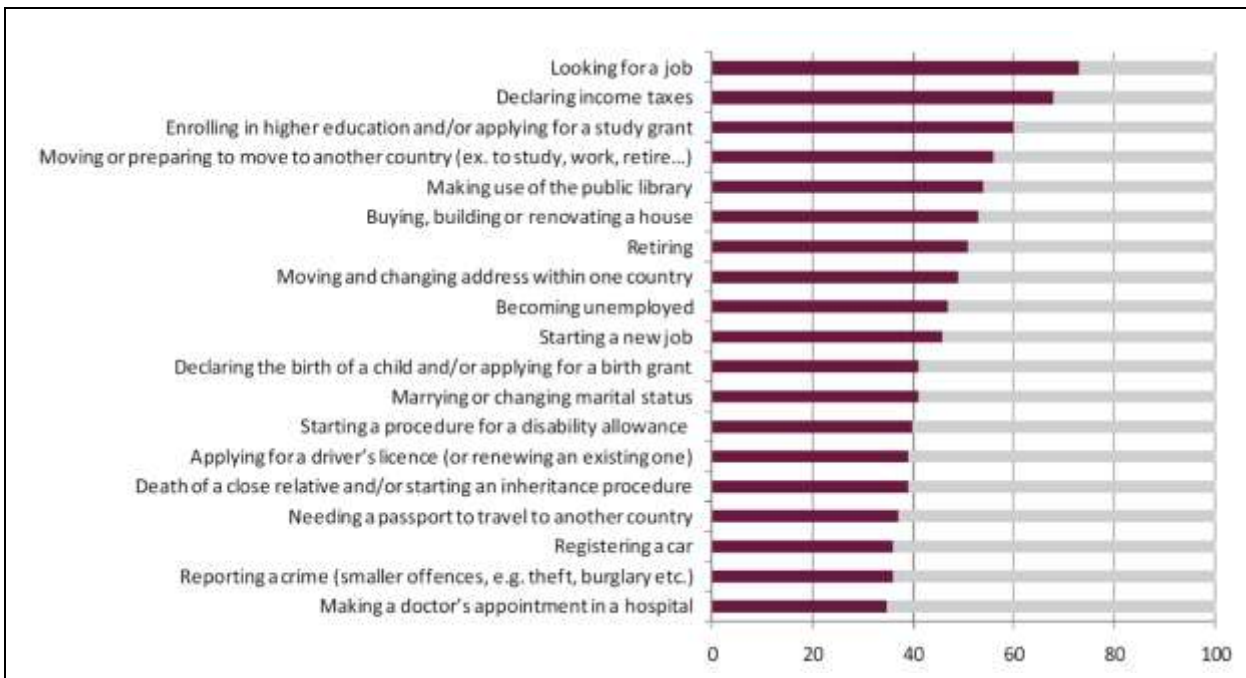


Figure 21 Use of e-government life-event services (European Commission, 2012)

Mates et al. (2013) examine European countries' e-government projects. From this study, it is possible to extract a number of services to further illustrate the variety of e-government services. Their study explores new kinds of services made possible by technology, see table 5. These types of services utilize attributes of technology to offer new possibilities for citizens, for instance the ability to subscribe to information that you may need but do not know, when is available (book delivery at the library) or a reminder of an appointment (health sector). Furthermore, services can avoid the previously required direct communication between civil servants and citizens, for instance in the online booking systems, thereby removing constraints on citizens at the same time as saving administrative time for public sector. New types of services may also strengthen transparency and legal certainty and ultimately democracy by allowing citizens to see, which information is held by public sector about them and making the process of law making open, which allows the citizen to debate and influence. Finally, Mates et al. (2013) find a number of projects concerned with reliable message delivery (as the Danish DP), also known as certified mail systems (CMS) (Tauber, 2011).

Table 5 Services derived from EU e-government projects (from Mates et al., 2013)

Service	Description
Distribution of requested information	Citizens can subscribe to needed information (e.g. arrival of a book at the library) and public institutions can forward useful information for citizens and/or the public institution, e.g. a text message if your child is not at school or the reminder of a doctor's appointment.
Online booking	The citizen can book and reschedule appointments with public sector entities. This may be more convenient for citizens because they do not have to queue and it saves staff from managing the calendar.
Online providing of personalized information from different public institutions	This is the easy and convenient access to personalized and updated information from a range of different public institutions that means that citizens do not need to engage with civil servants but can draw information when needed. From the Danish portal Citizen.dk, the citizen can draw information about property, children (the schools they attend), income and tax, movements, welfare payments etc.
Digital legislation and collection of laws	This service enables the citizen to follow the legislation process by examining documents of the legislation process at the different parliamentary stages. The Danish government has further decided to publish all court decisions. This form of service may be conceived as merely informational; however, the increased transparency of the legislative process may strengthen the democracy.
Reliable delivery systems	The use of regular e-mail as a communication channel between government and citizens entails a range of disadvantages, e.g. the volatility of e-mail addresses, that it does not provide a secure channel and that you cannot be sure of the identity of the sender/receiver. Mates et al. (2013) compare these systems with "Classic postal services, i.e. with the guarantee of delivery by the third independent person and with the preservation of privacy of correspondence, which is part of the documents of the fundamental rights and freedom" (Ibid., p. 111)

The underlying assumption is that services are something that governments offer and that citizens can choose to use (consume) – in essence, that it is voluntary. While most often taken for granted, it is declared in some studies, e.g. "e-government services are highly voluntary" (AlAwadhi & Morris, 2008), because "[g]overnments cannot actively stimulate or even force usage in the same way as a private organization can order employees to use a certain IT system" (Axelsson & Melin, 2012) and "[b]ecause citizens can readily exit e-government transactional relations and switch back to their paper-based predecessors" (Tan et al., 2010).

The influence of the particular service, characteristics and how it is produced, delivered, consumed and perceived have not had much attention in the e-government field (Venkatesh et al., 2012). While e-government is perceived as voluntary, the study of the adoption of e-government is paramount. Adoption has been investigated using services as a general notion to be adopted by citizens (e.g. AlAwadhi & Morris, 2008; Bélanger & Carter, 2008; Horst et al., 2007; Lean et al., 2009; Thomas & Streib, 2003). Other studies investigate specific services; tax filing (Bélanger & Carter, 2008; L. Carter & Belanger, 2005; Hung et al., 2006; Warkentin et al., 2002), car registration (Bélanger & Carter, 2008, 2009; L. Carter & Belanger, 2005) and use of e-mail communication (Gauld et al., 2010; West, 2004). Studies deduce from either the general 'service' concept or from a particular service to conclusions about e-government as such; e.g. Lean et al. (2009) conclude 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".

Rana et al. (2012) investigated 112 studies of e-government adoption from 2000 to 2011 and reported on the type of services that was investigated for each study. The findings reveal that 75 of the studies merely refer to the services involved as "e-government services", "infor-

mation systems”, “e-government websites”, “online public information and services” etc. As the only exception, L. Carter and Belanger (2005) recognize that the answers from the respondents were influenced by the nature of the service (the study involved tax filing and car registration). It might be intuitive that citizens perceive the service differently whether they primarily are obliged and have no direct gains (filing tax) or having a direct incentive (gaining convenient transportation).

Few studies have applied constructs from service management research, promoting a more differentiated approach to e-government services. The insight from another field makes a clear point about the inherited and tangible nuances in e-government that may be neglected by the e-government research field as such. Venkatesh et al. (2012) examined the influence of service attributes on the intention to use of two different e-government services from a survey of 2465 citizens in Singapore. The two services were online booking of an appointment with a public sector office and tax filing. Online booking was chosen for being a simple e-government service and tax filing a complex service (more steps, more information needed). The respondents were asked to rank the relative importance of the service attributes, defined as usability (number of steps), security provision (degree of), technical support provision (level of support) and computer resource requirement (hardware, software) from their imagined use of one of the services. The author provides significant proof that services cannot be treated generically. The results showed that security was more important for tax filing; participants were more patient with the more complex tax filing (accepted more steps) and had no acceptance of additional hardware and software requirements while making online booking. From the results, the authors state that “when use of an e-government service requires specific software and hardware (e.g. printer and scanner), people will be more willing to procure these additional resources only if the service helps them perform sophisticated tasks that perhaps give them a great deal of convenience and provide monetary benefits” (Ibid., p. 125). Moreover, the authors found interesting results in segmenting the sample for each service. The analysis resulted in four segments, namely 1) the *balanced* seek substantial level of technical support and a moderate level of security, 2) the *usability-focused* prefer very easy-to-use services, 3) the *risk-conscious* greatly value the security of transactional services and 4) the *resource-conservative* prefer not to acquire any hardware or software. The balanced segment had a higher representation of lower educated people, less computer experience and relative lower income. The resource-conservative segment has a higher representation of men and higher educated. Finally, the results showed that the risk-conscious had a higher intention to use the e-government service. The authors suggest that these types of results “help identify and rank those service attributes that are considered important by citizens” (Ibid., p. 129), which in practice would mean, for instance that an online booking service should have few steps, require medium security and no additional hardware or software. Further, if these results were taken as face-value, e-government designers need to serve both the citizens that rely heavily on animated instructions (implying installing the additional Flash-player) due to lack of computer experience and low education level, and the resource-conservative that would be annoyed by animated instructions. The authors suggest that governments need to distinguish between segments of citizens and offer a greater level of personalization of services.

Other studies also support a more nuanced view on e-government. Tan et al. (2010) study the influence of service-content (what the citizen is receiving from an e-government website) and service-delivery (how well citizens are accessing it) on citizen perception of e-government service quality. The authors find that the service content is more significant for the overall service quality with low frequent use and that service delivery is more significant for high frequent use and recommend that more resources might be required when designing content functionalities of frequently used e-government services. More resources might be needed if offering ubiqui-

tous accessibility of the content of infrequently used services. This view of the need for e-government research to approach services differently is supported by service management literature. In this view, service is intangible and is - in essence - a process. The production and consumption of the service occur simultaneously and in a co-production between the service provider (civil servant) and the customer (citizen), which means that “understanding and influencing the customer’s perceptions of a service is fundamental to their experience of, and satisfaction with, that service” (Stephen P Osborne, 2010, p. 3). S. P. Osborne et al. (2013) argue that co-production of the service is inevitable and rejects the perception of civil servants of producing and delivering the service to a passive citizen that only demands, consumes and evaluates. The challenge is to manage the co-production. Even though, this service concept originates from personal contact between civil servant and citizen, the authors argue that “such [digital public] services do still exhibit coproduction from a services management perspective” (Ibid., p. 146) and the authors suggest that “coproduction becomes an inalienable component of public services delivery that places the experiences and knowledge of the service user at the heart of effective public service design and delivery” (Ibid.).

Barth and Veit (2011) actually investigate citizens’ preferences towards different e-government services. The authors surveyed a representative sample of the German population about their perception of ten different e-government processes as digital services, for instance the perception of conducting a civil marriage or registering a new address online. The authors argue that public services are not equally fit for digitization and that governments need to prioritize what services to digitize. They found that the biggest resistance to digitization was connected to sensory requirements. Complex and ambiguous services demand more consultation. Services that demand consultation and/or personal involvement constitute sensory requirements. The authors state that marriage and registering your child in primary school demands high involvement. Complex tax filing may require need for consultation, thus sensory requirements. Performance risk, relation requirements and synchronism requirements were constructs that were also found to be related to resistance to e-government services. As the authors note, high resistance does not necessarily mean that a service cannot be digitized, but that it has to be done offering more resources and attention. From their study of the influence of process characteristics on resistance to e-government, they conclude that “evaluation results for one process cannot thoughtlessly be transferred to other processes, not even to the delivery of a similar service in another nation. Rather, the discrepancies of the concrete services and the differences in the respective physical process delivery have to be taken into account, as these provide the foundation for the perception of the respective users” (Ibid., p. 15).

Finally, Nusir et al. (2012) offer an e-government service taxonomy based on service literature. The authors find that public services may adhere to 1) categories of e-government (G2C, G2B, G2G, G2E), 2) service maturity, covering both number and type of service, and the delivery through the internet, 3) service capability, 4) sophistication, 5) clusters (registration, fiscal services, social services, permits or licenses), 6) service package (facilitating or supporting), service structure (organization, e.g. back-office, front-office), 7) services as functional services or communication.

3.1.3 Citizens and employees

It should be trivial that human actors affect and are affected by e-government because they are the ones that actually must perform some actions for e-government to happen. As long as it is not possible for e-government systems to manage the case handling and decision making, this must be true both on the government side and on the citizen side. Citizens were mentioned in 49 of 50 leading e-government papers and it is obvious that the citizen is an important part of e-government (paper 1).

In adoption studies, attributes of citizens have been included as moderating factors of the various antecedents of use of e-government, e.g. facilitating conditions such as supervision and support from relatives has an influence on intention to use technology for older women (Venkatesh et al., 2003). The influence on use of e-government of attributes such as education, gender, income, ethnicity and internet and computer skills were examined by Bélanger and Carter (2009) and they found that income, education and age were predictors of intention to use, whereas gender and ethnicity were not. Further, they found that computer experience and internet use were not predictors of intention to use. Race, income and education have in other studies been argued to predict use of e-government. It is remarkable, however, that attributes of citizens depending on attributes of services have not had great scholarly focus, with the notable exception of the two studies that have already been mentioned (Tan et al., 2010; Venkatesh et al., 2012). Further, the influence on e-government from (intention to) use of trust in government, trust in the internet (L. Carter & Belanger, 2005) and risk perception (Horst et al., 2007) has been studied. It has been stated that use of e-government generates trust in government, which leads to further intention to use (Ibid.). Whether the person feels enjoyment and has access to supporting resources, for instance from the workplace, has also been seen to influence the intention to use e-government services (Helbig et al., 2009).

From seven distinct focus groups based on segments of the New Zealand population (business, rural, middle New Zealand, mature immigrants, young immigrants, beneficiaries, indigenous), Cullen (2005) provides an exception and shows how different groups of citizens have different needs, user experience and attitude towards e-government and perceive different barriers differently.

Public sector employees were included in the definition of half of the leading e-government articles, but were only part of the scope of the research in two articles (A. Cordella & Iannacci, 2010; Ndou, 2004). Nripendra P Rana et al. (2013) reports from a supposedly first review on literature of employee adoption of e-government and claim that “many aspects such as job relevance, security, perceived benefits, anxiety, and perceived quality are clearly significant as far as employee’s adoption is concerned, they have not been investigated to their potential” (Ibid., p. 414).

3.1.4 Infrastructure

Ebrahim and Irani (2005) provide an enterprise architecture view of e-government that includes an access layer, an e-government layer, an e-business layer and an infrastructure layer (this view was applied in figure 2 regarding DP, p. 14). The various users of the e-government service enter the service through the access layer, which includes the communication devices and communication channels. Devices include computer, tablet, and phone that the user has direct access to and the communication channel may be the Internet, power-net, telecommunications etc. The authors also include video-conferences and locations where the user has access to both the access device and the channel (contact-centers, kiosks). Through the access layer, the user can connect to the e-government layer. At this layer, the various e-government websites are integrated into a portal that may be accessed by a single sign-on. The different websites from the e-government layer access the underlying application, which draws upon the necessary data. Applications and data comprise the e-business layer. The authors ascribe document-management systems, ERP systems, CRM systems, case handling systems, web-services and groupware systems to this level. Data may be local data or enabled access to data across public sector. The infrastructure layer comprises the hardware and communication technologies.

From the e-government enterprise architecture view it is clear that the back office of e-government is not trivial. In their article “Forward to the past”, Bannister and Connolly (2012)

claim that in order to achieve benefits from e-government, governments need to go “back” and finish the business of interoperability. The authors argue that interoperability issues have been at the agenda for decades and there is no sign of having solved interoperability issues. It is of little use to constantly develop front end features if the back office cannot follow. Interoperability issues are hard to deal with because implementing interoperability requires “addressing problems on several different fronts simultaneously and that most of these fronts are not technical, but semantic, human, political and organizational”, further, it demands the will to “police and enforce it” (Ibid.). The lack of addressing these more technical features by scholars was also addressed by Orlikowski and Iacono (2006). From the leading e-government articles, we found only two studies of 50 that examined some IT aspects of e-government (Ebrahim & Irani, 2005; Guijarro, 2007).

3.1.5 Evolvement

E-government has been suggested to evolve in stages. The so-called stage models emerged at the beginning of the century from private consultants and shared a very rational perspective on technology use in public sector (Gartner group and Deloitte). The perspective was incorporated in UN and World Bank frameworks and has had an immensely impact on e-government research. The scholarly presented variations of the stage model were heavily represented in the leading articles 2000-2010 (K. V. Andersen & Henriksen, 2006; Hiller & Bélanger, 2001; Layne & Lee, 2001; Reddick, 2004; Wescott, 2001; West, 2004), a synthesized model (Lee, 2010) and critique of the stage model view (Coursey & Norris, 2008). The stage model approach is *the* ‘theory’ of e-government amongst the e-government research community and may be one of the two scientific theory building attempts (the other being adoption).

The variations of the model, except from one study (K. V. Andersen & Henriksen, 2006) all follow the same trait, though the definitions of the stages may vary. The first stage is, where the government displays information on the web, thus citizens get more convenient access to more information more timely. Second stage is two-way communication, where the government makes it possible for citizens to write to public institutions by e-mail and get answer the same way. This was launched as eDay1 in Denmark (2003), where Parliament made it legal for public institutions to send e-mails to citizens. Stage three is transaction, where public institutions make it possible for citizens to make transactions, replacing civil servants with web-based self-services (Hiller & Bélanger, 2001). This could be financial transactions like paying a fine or non-financial transactions as applying for a new health card, or on-line access to public databases (Layne & Lee, 2001), for instance the on-line access to public data about property. The next steps are vertical and horizontal integration, where technology is integrated first vertically within domains and subsequently across domains, perceived as “information and data sharing among different functions, units and levels of government for better on-line public services” (Layne & Lee, 2001), offering the citizen a much more seamless access to services, so-called “portals”. The final stage is e-democracy, where citizens are consulted and participate in political decision making through the Internet and by e-voting. There is no clear consensus on, whether the stages should follow concurrently, whether all stages need to be fulfilled before entering a new stage or more stages can be entered at once. Moon (2002) explains that the stage model serves a conceptual purpose, hence, “the framework simply provides an exploratory conceptual tool that helps one understand the evolutionary nature of e-government” (Ibid., p. 427). The most cited version of the stage model (Layne & Lee, 2001) is depicted in figure 22.

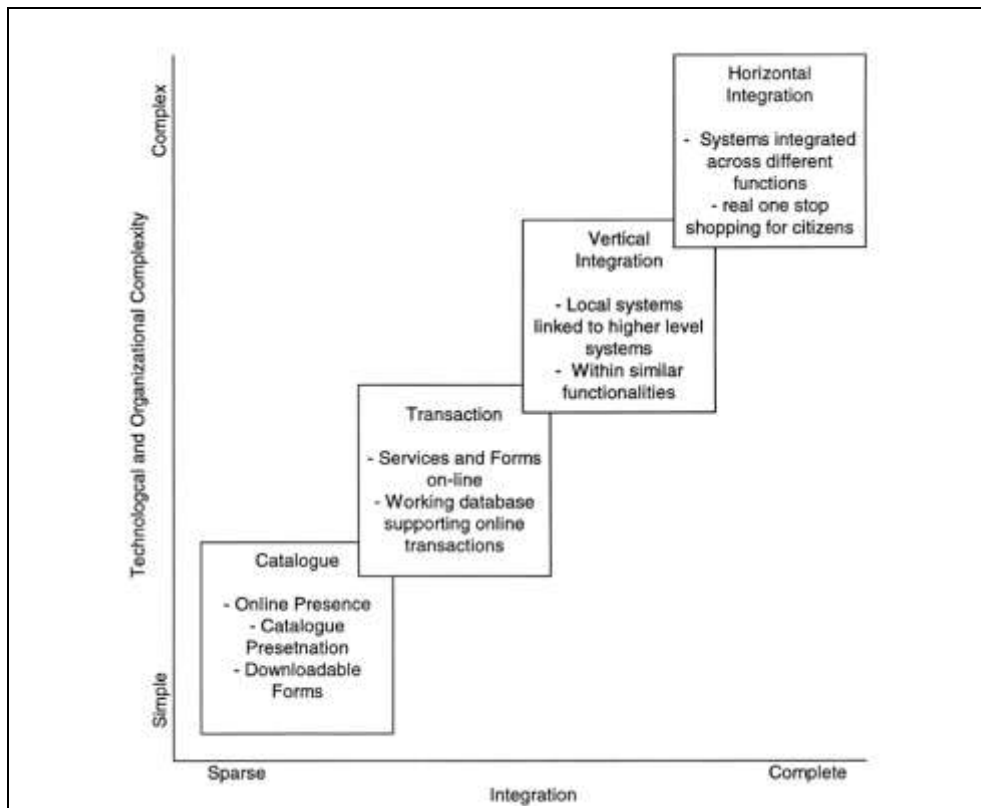


Figure 22 Dimensions and stages of e-government (Layne & Lee, 2001)

The general technological determinism approach behind the stage model concept may be inferred by examining the rhetoric by Lee (2010). He performs a thorough analysis of 12 different variants of the stage model and finds that the models cover two different perspectives, namely a citizen/service perspective and a technology/operation perspective. From the citizen perspective, the path is 1) presentation of information on websites, 2) interaction, which is two-way communication, 3) transaction, service and financial transaction via websites, 4) participation, where public organizations consult with citizens through the internet and 5) involvement in political decision making. The technology path follows 1) presentation of information on websites (the same stage as for citizens), 2) integration of interface, service or database, 3) streamlining processes to be adequate for technology support, 4) transformation into new types of government operations and 5) process management through a configurable system. He argues that the two processes occur in tandem. The stages are designated a metaphor as follows: 1) presenting, 2) assimilating, including interaction and integration, 3) reforming, including transaction and streamlining, 4) Morphing, including transformation and participation and 5) e-governance, including process management and involvement. Lee asserts that his proposed model is “comprehensive enough to include all the features of previously proposed stage models” (Ibid.), see figure 23.

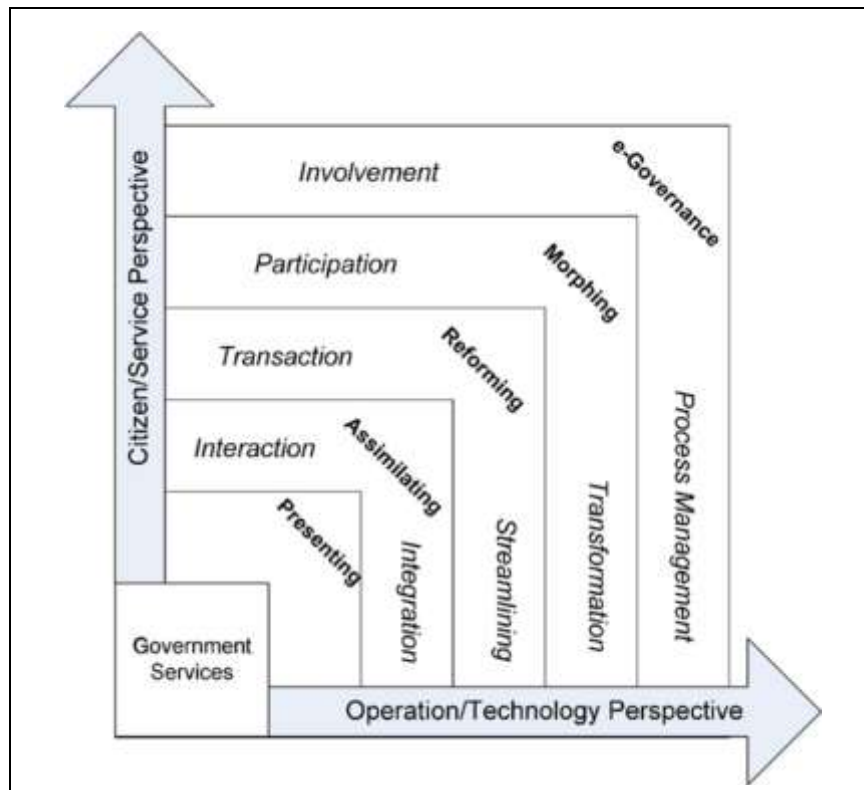


Figure 23 E-government stage model (Lee, 2010)

The *reforming* process occurs by changing business processes with the underlying technologies, which will change the processes with citizens:

“the processes in the real world begin to be reformed”. The author refers to an “information space” within the organization. In the morphing stage, following the reforming that changed the processes and services in real world, as this change progresses, “morphing of services and operations tend to follow as these two worlds are being intertwined, resulting in a change of the ‘business model’ of government itself. Once the actual transaction capabilities are realized in the information space and citizens and officials begin to see the possibility of process and service streamlining, government operation will be transformed into newer configuration of services and processes, (...) and citizens will become more participative than prior (...), tasks of government officials would be transformed into knowledge based duties and service-oriented tasks that would more directly address citizens’ needs (...). Once that the routine-type government services (...) are automated and delegated to information technologies, the functions of governments will be more focused on planning and developing new services for citizens. Lee (2010, pp. 227-228)

About the *e-governance* stage:

“[T]he norm of government and governance would begin to change. Ideally, citizens would be able to get more involved in political and administrative decision-makings, while these decisions, technologically and operationally, would be implementable almost real-time with reconfigurable process management facilities” and finally, “[t]his is an ideal stage, where the business processes of administrative and political services can be reconfigured almost real-time based on citizens’ actual involvement in decision-makings of the government, actually utilizing the full capability of advanced information and communication technologies”. Lee (2010, p. 228)

Even though Lee contributes to advancing the e-government research by distinguishing two different perspectives, namely the citizen and the technology perspective, it is unclear why his synthesized model intertwines the two perspectives to be totally inseparable in every stage. Bannister and Connolly (2012) argue that this deep connection between the interface towards the citizen and the back office systems and operations simply is not inherent. The interface towards the citizen, for instance in a portal model, where all e-government services can be accessed, can be accomplished in two ways, namely as vertical and horizontal integration (as Lee presumes) or simply as a result of a coordinating layer. Whether it is the former or the latter is not important to the citizen as long as the portal enables access to seemingly integrated services (Ibid.). The stage models assume that e-government can only occur connected to back office technologies. Many public institutions utilize social media for e-democracy, participation or consultation, disconnecting the link to back office systems and operations.

Bannister and Connolly (2012) argue that it is necessary to go “back to the past” to finish the work that has never been finished, namely interoperability and desiloization. To be able to do this, the authors state that it is necessary to “move away from a technology-driven mindset and the type of technical rationality that often accompanies it”. To be able to perform the reforming stage from Lee, Bannister and Connolly would claim that it would be necessary to “rethink entire structures and processes of government as well as legal frameworks” to manage the desiloization. Further, they argue that challenges are not primarily technical. Moreover, it “needs long term planning, extensive discussion and negotiation, attention to detail and, above all, tenacity”. Tenacity may be difficult in a long term project because political and financial support may be lost underway, and to succeed, “such projects need mechanisms including organizational and political arrangements which can persist over a long period”. These human, political and organizational factors are absent and not considered by the stage models evangelists; technology appears to be able to drive the changes automatically.

Lee (2010) assumes that transformation of civil servant processes and citizen processes will go hand-in-hand in tight collaboration, neglecting that the needs and interests of civil servants and citizens are not necessarily the same. Civil servants work within the constraints of the bureaucracy and must adhere to political and organizational authority in an efficient manner, while the participation of the citizen in this process may be counterproductive (Stivers, 2001). Moreover, in the morphing stage the employee tasks will be performed by technologies. Thus, the employee – Lee claims - has time to focus on citizens’ needs and innovate new services. From the leading articles (paper 1), we found that efficiency gains were the absolute predominant e-government driver. Efficiency is not an end in itself in the real world - reduced costs are. By increased efficiency, the same production can be done by less resources. Thus, efficiency gains will inevitably be followed by reduction of headcounts – or even be realized before efficiency gains emerge - on anticipated grounds. This is a major flaw of the Lee (2010) model logic. Lastly, in the e-governance stage, citizens produce ad-hoc decisions that – untouched by humans – Lee claims – will be realized automatically by technologies. This will be difficult to practice in a representational democracy where elected politicians have the duty and responsibility to take decisions on behalf of the citizens and, where public managers are accountable for decisions within their functional operations. Hence, the necessary coordinating and negotiating will rule out automatic ad-hoc, autonomous decisions by citizens, even if supported by technologies.

Coursey and Norris (2008) criticized the stage models from an empirical background. They followed the progression in numbers and types of provided public services in US local governments through surveys in 2000, 2002 and 2004. They found very little progression, that only a few local governments had entered the transaction stage and none were above this stage and argued, very convincingly, that e-government can only progress incrementally, “This predicted

movement is not happening, or if it is, the movement is glacial in its speed”, and “few governments reported any changes that are attributable to e-government, especially changes involving cost impact” (Ibid.). The empirical data revealed a number of legal, financial, organizational and technical barriers. The authors argue that the particular barriers will affect different governments differently. They criticized the models for not dealing with influence of different attributes of governments on e-government. The data also revealed that local governments in the transaction stage did not experience significantly bigger changes than governments in the information stage. If the ‘stages’ exist, the governments in a ‘higher’ stage would experience a significantly higher level of changes. The authors conclude that the stage models were “based on neither extant theory nor empirical data” which caused the weak consistency between the stage models and the findings and further, that the models are not true models, but guesswork of what e-government could become based on technological determinism. The authors find no reason whatsoever for why e-government should evolve in stages and in a specific number of stages. Moreover, The authors wonder why e-government should conclude with citizen participation and “e-nirvana” and refer to the claims by some scholars that IT systems “simply reinforce existing power arrangements” (Ibid., p. 534) and this does not support enhancement of citizen participation.

Further, they criticized the models for not dealing with *how* the evolution will occur, especially how the numerous barriers will be overcome. This seems especially relevant as the authors found that lack of back office funding and staff constituted the most frequent barriers to e-government. Both funding and appropriate staff would hamper every stage and be paramount in the reforming stage. F. Norris and Reddick (2012) added data for 2011 in a follow-up study from Coursey and Norris (2008) and still found weak support for the stage models.

A further limitation of the stage models view is that evolution is perceived as involving only the public organization and only subsequently, the citizen. The Danish e-government evolution can be characterized by many centrally decided interventions into the evolution of the particular public organization, see 2.1, p. 11:

- Standardization of core data for persons, businesses and buildings in the 1950-60es
- Centralized access to core data for public organizations
- The enforcement of e-invoice for public sector
- development of common architecture for case handling (digital archiving)
- The political decision that every public organization should be able to communicate digitally with citizens
- Enforced digital communication between public organizations and businesses and citizens
- Mandatory business portal for registration of information to public sector
- Mandatory citizen portal
- Mandatory eID

Public institutions must adapt to such centrally decided e-government. Where applicable, centrally imposed e-government initiatives will reduce funding to public institutions according to the anticipated effects for the particular institution, which also affect the resources available and the ability to enact the stages of the model. Centrally imposed conditions have not been foreseen by the stage model approach.

There have been few alternatives to the technological deterministic stage model view. One study with an alternative view is K. V. Andersen and Henriksen (2006), who criticize the traditional stage model view for not reflecting the interests of the citizens. The authors suggest a revised stage model with a data-centric approach where data ownership during the maturing process shifts from government to citizen so the citizen controls her own data. This article was

the second most cited e-government paper in 2006; however no attempt has been made to elaborate further on this view. Also this model was only to a limited extent based on theory and empirical results.

The stage models are important to be aware of because they still attract considerable attention amongst e-government scholars. The Layne and Lee (2001) stage model article from 2001 had the most citations in 2010 and nearly as many in 2011 and 2012 (Google scholar, November 2014). The Lee (2010) article had the most citations in 2013.

3.1.6 Individual Adoption

The other major stream in e-government research constitutes variance studies grounded on behavioral models of antecedents for citizens' adoption of e-government, see paper 1. From a review of 70 e-government adoption papers, applying adoption models (Rana et al., 2012), the most applied were the Technology Acceptance Model, TAM (Davis, 1989), the IS Success model (DeLone & McLean, 1992), Diffusion of Innovations, DOI (Rogers, 2003), the unified theory of acceptance and use of technology, UTAUT (Venkatesh et al., 2003) and Theory of planned behavior (Ajzen, 1991); and mostly from a survey approach. The most investigated independent variables were perceived ease of use, perceived usefulness, attitude, satisfaction and perceived control. The far most applied dependent variable was intention to use. Actual use were found in only two studies (Rana et al., 2012). In a total of 433 e-government adoption studies, the authors found 177 independent variables and 110 dependent variables and claim that e-government adoption theory building is weak due to application of theoretical adoption models perceived as random.

UTAUT incorporates eight different adoption models (including the already mentioned) and was applied in paper 6 to frame part of the survey. UTAUT predicts that performance expectancy, effort expectancy, social influences and facilitating conditions impact behavioral intention, which influences actual behavior. Behavior intention and use are moderated by gender, age, experience and voluntariness of use, see figure 24.

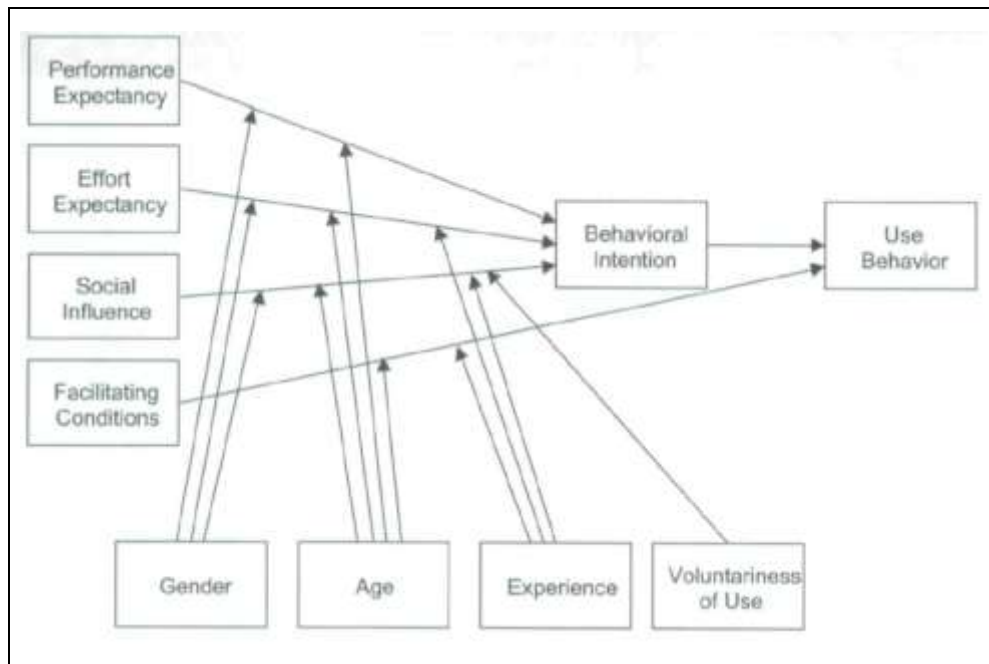


Figure 24 Unified theory of acceptance and use of technology model (UTAUT) (Venkatesh et al., 2003)

Performance expectancy is “the degree to which an individual believes that using the system will help him or her attain gains in job performance” (Venkatesh et al., 2003, p. 447) and includes the perceived usefulness (TAM) and relative advantage (DOI). *Effort expectancy* is “the degree of ease associated with the use of the system” (Venkatesh et al., 2003, p. 450) and includes perceived ease of use (TAM). *Social influence* is “the degree to which an individual perceives that important others believe he or she should use the new system” (Venkatesh et al., 2003, p. 451). *Facilitating conditions* is “the degree to which an individual believes that an organizational or technical infrastructure exists to support the use of the system” (Venkatesh et al., 2003, p. 453) and includes compatibility from DOI. Compatibility refers to the degree with which an innovation is perceived as being consistent with the values and needs of the potential user (Rogers, 2003).

Even though the behavioral approach has been criticized for unrealistic assumptions of rational choice on behalf of full information (Bagozzi, 2007), and for not being able to predict actual usage (Venkatesh et al., 2012), it is still widely applied (Rana et al., 2012).

Among the leading e-government articles, we also found trust as a major antecedent to citizens’ e-government adoption (Bélanger & Carter, 2008; Horst et al., 2007; Warkentin et al., 2002). Citizen trust may be a major barrier to e-government adoption when e-government is perceived as voluntary. Trust may be defined as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (Mayer et al., 1995). Trust stems from trust in the technology and trust in the public institution. Trust implies a perceived risk; risk has been associated with privacy issues. Akkaya et al. (2012) have investigated different perspectives on e-government from a cultural perspective and found that Germans found data protection and privacy issues more important for e-government use than Swedish citizens, while Swedish citizens found convenience and customizability more important.

While citizen adoption has been immensely studied in the voluntary e-government context, research in a mandated e-government context is sparse (Chan et al., 2010; Lu et al., 2012).

Brown et al. (2002) suggest that presumptions for technology adoption may be different in a mandatory environment than in a voluntary and claim that in a mandatory environment “TAM relationships provide limited explanations of acceptance, and perhaps misleading guidance to organizations”. They argue that user satisfaction may be more relevant as dependent variable than intention to use in a mandated setting, because there may not be a relation between perceived usefulness (performance efficacy in UTAUT) and use when use is mandated. The authors claim that dissatisfaction with mandated use of a technology might lead to obstructive user behavior and impact negatively their job satisfaction, feelings towards their employer and loyalty to the organization. Further, they claim that attitude is more directed against the *use* of the technology more than the *outcomes* of technology in a mandatory environment. Their empirical data shows that ease of use correlated more in a mandated setting with intention to use than perceived usefulness, which is the typical case in voluntary settings. Even though perceived usefulness was found to impact attitude (as would be in a voluntary setting), supplementary interviews with users revealed that they defined usefulness in another way than before. In a voluntary setting, usefulness was related to delivering good quality to the customers, in the mandatory setting, it was related to productivity.

Chan et al. (2010) studied citizen satisfaction with a mandated identity card in Singapore to access e-government services. According to four stages of an e-government initiative, they tested eight antecedents to the four factors of UTAUT to predict citizens’ satisfaction with the mandated identity card. The dependent construct from UTAUT is given in parenthesis.

Stage 1, market preparation: *Awareness* may make citizens believe that important others promote the service (facilitating conditions), thereby affecting further satisfaction.

Stage 2, targeting: In this stage it is important to find the customers that are most motivated for the new service, which include Compatibility and self-efficacy. *Compatibility* (social influences) must be examined on the basis of individual citizens’ lifestyles, which is essential in a mandatory setting because “[t]he fit between the technology and one’s existent practices is especially important because adoption of the technology means that citizens must follow preset procedures to use the technology to access needed government services” (Ibid., p. 527). *Self-efficacy* (facilitating conditions) is also expected to be especially important in mandatory settings “as citizens do not have equal capability to use the technology” (Ibid., p. 527).

Stage 3 Positioning: This stage is about convincing citizens about the positive new features of the technology, which in e-government is the *flexibility* (performance expectancy), because the service can be accessed independently of time and location, and the *avoidance of personal interactions* (performance expectancy), which has been shown to be important to citizens.

Stage 4, executing: This stage includes trust, convenience and assistance. *Trust* (performance expectancy) is perceived to be especially important in the mandated setting and constitutes privacy, security and that technology will act in accordance with expectations. *Convenience* (performance expectancy) will be particularly important in mandatory e-government, “[g]iven the potential resentment citizens may have towards using a government mandated technology, its convenience will be salient” (Ibid., p. 527). Sufficient *Assistance* (facilitating conditions) is required to some citizens because citizens come with very diverse capabilities and backgrounds.

The authors found all constructs to predict e-government satisfaction through the UTAUT constructs, except from awareness.

Lu et al. (2012) tested 136 Chinese citizens' satisfaction with a mandated tax system, finding that perceived security, perceived value and perceived fit with the task predicted satisfaction.

Shanshan (2014) suggests a conceptual model that combines both government and citizen adoption, see figure 25. The model was not empirically tested, but indicates the variety of antecedents for e-government adoption, as seen by both covering government adoption and citizen adoption. The author, however, fail to integrate the individual staff adoption as part of the government adoption.

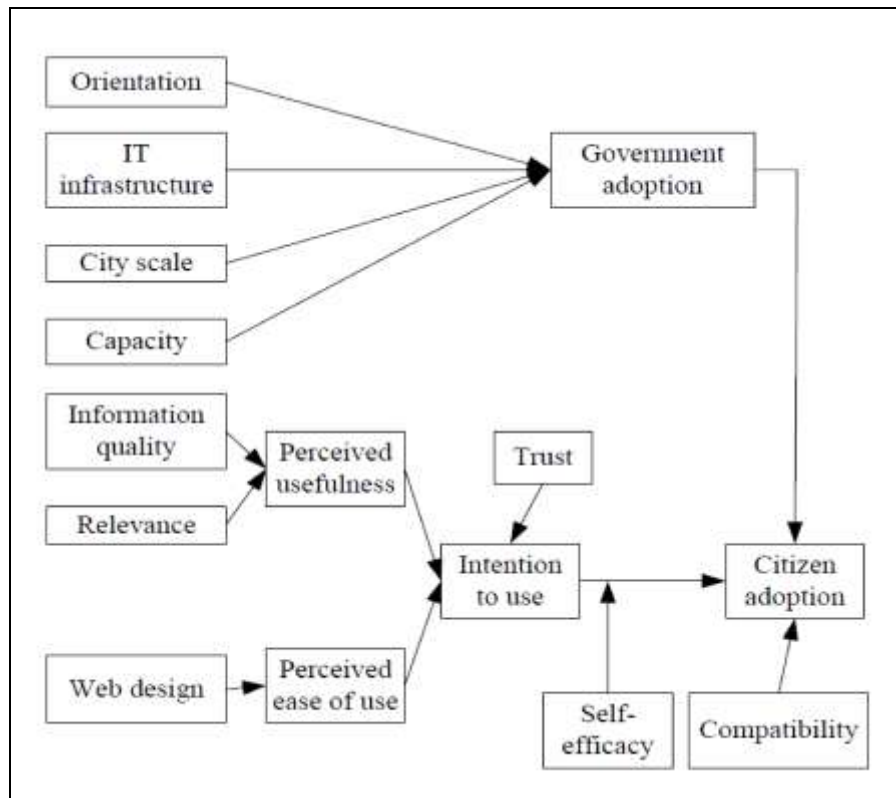


Figure 25 Integrated e-government adoption model (Shanshan, 2014)

3.1.7 Barriers

J. Ramon Gil-Garcia and Pardo (2005) categorize the primary barriers to e-government as information and data, information technology, organizational and managerial, legal and regulatory and institutional and environmental. These categories are in line with a case study of challenges in 15 e-government initiatives (Ndou, 2004), however she adds the organizational and human factors. According to Ndou “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” (Ibid., p. 3). Ndou describes the core barriers as following:

IS infrastructure covers the technical infrastructures, access and literacy for the relevant actors (citizens, businesses, other governments and employees) and that “having the education, freedom and desire to access information is critical to e-government efficacy” (Ibid., p. 13).

Policy issues include the regulatory framework to support privacy issues, e-signatures, archiving, data protection and property rights.

Human capital development is central for successful e-government implementation. This includes technical skills to manage printers, scanners, projectors, computers and other hardware

recurrent installation and upgrade of software, different applications with different interfaces, import, export and treatment of data, internet connections, secure treatment of data, transfer of data between systems, legacy systems, the skill to 'connect' systems arbitrarily, office program skills etc. Human skills also include understanding of data, data integrity, formats, and databases, backup and restore processes. Project management skills are necessary in the never ending system development and implementation projects and finally some legal skills are necessary to be able to elaborate and understand legal documents.

Change management skills are pivotal. As e-government is said to 'revolutionize and reinvent' government, the effects of e-government will not emerge without change management. Ndou distinguishes two sub areas, namely the change management approach and the management of resistance to change. The resistance of employees to change in work environment constitutes the biggest barrier to successful change. A major rationale for e-government is efficiency, i.e. lower cost, which derives from fewer headcounts and this will create resistance. If employees are sufficiently adapted to working with technology, they will have to adopt new technologies and ways of working on the fly in a learning-by-doing manner. This may create resistance.

Partnership and collaboration is a prerequisite of e-government also due to its networking nature. Workers and managers will need to collaborate with internal IT project managers and also with system vendor's project managers, account managers and external consultants. Also collaboration with governments at upper levels, establishing systems and feeding data, will be inevitable. Collaboration with other public organizations at similar level with the similar tasks is widely known. IT projects are hard to manage and to be able to meet time and budget, e-government initiatives will inevitably be characterized of informal, agile oriented work where formal agreements, formal approval from executives or the formally right treatment of data (violation of privacy rules) not always will be applied. This can be a challenge to a public organization with a bureaucratic culture.

Strategy for e-government initiatives is very important. A public organization needs to specify the anticipated effects from the project; make these effects measurable and set up targets for a specific period. An e-government initiative must be tailored to the specific context (e.g. the integration with other systems or processes). These requirements will guide the change process and without these, there is a risk that a system will be implemented and no one will ever know, whether it met the expectations. Likewise it is mandatory to establish the initiative as a project with sufficient project management resources, skills and accountability. As part of the strategy, e-government must be customer-driven and service oriented i.e. a vision that "implies providing greater access to information as well as better, more equal services and procedures for public and businesses [...], the end goal should be making government serve citizens better" (Ibid., p. 15).

Leadership is well known to be a prerequisite to change, and also e-government initiatives need a sponsor that attracts resources, formulates and sells the vision outside the project into the organization, creates the burning platform, supports and demands results from the project and maintain the pressure after project implementation to ensure the change and realization of the effects. This is even more pivotal in a complex public sector with multivariate goals and tasks.

Newer studies of barriers from an empirical study (D. F. Norris & Reddick, 2013) reports lack of financial support, lack of staff in IT department as the by far most important barriers from a survey of local government CIOs. Further, collaboration between IT department and operation departments and IT skills and IT knowledge of operating departments were reported as barriers by CIOs. These results were also significant in a qualitative study Danish local governments (Rose et al., 2012). From a conceptual framework, (Nurdin et al., 2011) posit that adaptability,

mission, involvement and bureaucratic forms constitute major organizational barriers to e-government adoption. While adaptability covers change management and human capital from Ndou, mission covers the strategy dimension from Ndou and bureaucratic forms are covered by the legal dimension and the partnership and collaboration dimension. The involvement dimension may offer new insight. Nurdin et al. (2011) find that the commitment of employees and managers is crucial to e-government initiatives. Participation of employees in e-government projects makes them more motivated and responsible to the goals of the institution. High level of participation will enhance the level of acceptance; hence reduce the level of resistance. The lack of involvement of managers constitutes a distinct barrier to e-government implementation. Finally, the relationship between local government and government may constitute a serious barrier in the case where local and national mission, vision, goal and strategy in serving the citizens are not aligned (Ibid.).

3.1.8 Effects

Depending on how success is measured, between 20 to 30 percent of e-government projects are considered total failures, and around 30 to 60 percent are partial failures (Goldfinch, 2007). The author offers examples of public failures from US, The UK, New Zealand, Canada and South Africa, demonstrating waste of a vast amount of financial resources. Examples from Denmark are the Danish Police Case Handling System (abandoned in 2012 due to delay and poor coding quality resulting in a loss of DKK 500 million) and delay of the Central Public Debt System (debt to public sector increased by DKK 7 billion in the 6 year delay period leading to revenue foregone). Goldfinch regards failure as project failure or operation failure. Project failure is when the IS implementation project does not meet time, budget and/or quality. Operation failure is where the system does not work properly, performance requirements are not met or the system is used in a way, which was not intended or, where use of the system fails due to user resistance, lack of user training, lack of user capability combined with high complexity of system. Finally, Goldfinch also notes that “Even projects that meet design specifications may not increase worker productivity or deliver other gains expected; productivity may even decrease.” (Ibid.).

Ward and Daniel (2006) introduced the benefits management framework to address the problem with effects from technology. Benefits management builds on the necessity to identify and evaluate the benefits before project inauguration, then realize the benefits and evaluate again, in line with Ndou (2004). The benefits management framework outlines a complete manual of how to practically organize and administer the realization of benefits during an IT implementation. Braun et al. (2010) stated from an empirical study the importance of the contextual factors. They also contributed by focusing not only at the project level (as the benefits management framework tends to do), but also at the organizational level. They show that benefits management capabilities and resources with regards to measurement, planning and realization are needed to ensure effects realization. Further prerequisites constitute integration into the managerial processes and support from top management.

E-government evaluation frameworks have been suggested to cope with lack of effect (Chircu, 2008; M. P. Gupta & Jana, 2003; Luna-Reyes et al., 2012), however, these have been limited to proposing measurements of an exhaustive range of variables and little on how to apply the framework to actually achieve benefits from a particular e-government initiative.

According to M. Lynne Markus (2004) effects are realized by incremental change in both technology and organization while actively turning potential benefits into measurable organizational results with use of prototypes in small iterations. The Technochange approach is designed to avoid resistance to change that may arise from users. As stated by Markus, realizing effects by

technology demands that technological change is joined by organizational change and that users are involved in the process. Markus observes that users can be biased against changes due to change in their work routines. Incremental change and on-going specification, measurement and realization of effects is suggested and applied by Hertzum and Simonsen (2011) as the effects driven IT development process. This framework builds on benefits management, however, instead of only measuring the benefits after an implementation, the benefits are measured *during* the implementation to ensure the parallel adjustment of system, organization and processes that are recommended by Markus.

3.1.9 Mandatory e-government

Even though, there are few studies of citizens' adoption of mandatory e-government, only one study of the institutional impact on local government from mandatory e-government was found.

Nurdin et al. (2012) suggest a conceptual model for mandatory local e-government, where three external forces exert power over local government, namely central government, regulations and citizens. Central government may decide policies that enforce local governments to adopt and implement certain technologies. Local governments may also indirectly perceive pressure to adopt certain policies and technologies to avoid central government from mandating. Rules and regulations constitute another external force, for instance the EU directive about open public data (PSI). Thirdly, the authors attribute citizens to exert external pressure to local governments due to their demand for digital public services with high accessibility and quality. From an Indonesian case study, they further find that external economic pressure can force e-government onto local governments. This study does not include mandatory e-government for citizens but only for local governments.

3.1.10 Negative impact from e-government

Heeks and Bailur (2007) criticized e-government scholars for being overly positive about the impact of e-government and being too technologically deterministic. From the literature review, the authors found very little critical research. Paper 1 extended the review from Heeks and Bailur to 2010 and found that this had not changed. We found one slightly critical article of the 50 leading e-government articles. We found no studies there were critical in the critical IS research sense of being critical. Few further papers have been found that are directly critical to e-government in the sense that they seek for emancipation and disclosure of oppression due to technological determinism.

Wastell and White (2010) report from an ethnographic study of the use of an e-government system to help identify and protect vulnerable children. The local government child care system was designed to contain a multitude of information about the child from observations and other actions from the variety of professionals (nurses, teachers, police, psychologists etc.) that participate in the case of a child, observed for removal from the home. The system launch was followed by a micro-management schema of performance goals and deadlines. The authors report from a stressful work environment, where employees spent time registering information in the system that they spent observing children before. As the authors note, the copy/paste function was used to quickly provide information from one child record to another, the workflow embedded in the system did not correspond to work practices and the semantics were seen to drive the process. One social worker had not finished a case because she had not yet seen the child. The manager wanted the case to appear on the finished list and argued that the system did only ask if "the child has been seen [by anyone]" (Wastell et al., 2009, p. 8). Another case describes how a 6-year old was "at risk" for a long time while the mother was struggling to "fit

the categories” in the system, even though the appearance of the boy was described as “normal for his age” in the first observation. The social worker trade union stated in a letter to the Secretary of State for Children that “The problems [with the system] appear to be fundamental, widespread and consistent (...), we have reports of a number of industrial disputes or collective grievances brewing or underway and in many more cases staff are voting with their feet and not using the system when they can get away with it” (Ibid., p. 1).

Stanziola et al. (2006) examine a mandatory tax system in Argentina and find “negative social effects from poor e-government services design”. From surveys of 1832 citizens, their analysis infers that an intermediary citizen expert level with sufficient system skills had emerged and that these intermediaries registered tax on behalf of other citizens that presumably did not have the capabilities to cope with the e-government service and thus, had to buy expert assistance.

3.1.11 Digital communication

Studies of electronic communication between government and citizen have been sparse. Governments’ responsiveness (response content and response time) to e-mails from citizens has been explored from an experimental approach (K. N. Andersen et al., 2011; West, 2004) where researchers send a ‘false’ e-mail to public institutions and measure responsiveness.

A recent study examines how public services and public communication technologies adoption (Li & Feeney, 2014). The authors compare the adoption of services (online payment, online delivery of public records, online job application, online services related to the department surveyed) and communication technologies (social media, text messaging, e-mail, audio webcast and video webcast). Findings show that adoption of services was related to internal organizational factors, such that more flexible organizations (less constraint on employees, less centralization) had adopted more services towards the citizen, whereas this factor was not significant regarding communication technologies. Public institutions that had adopted more use of communication technologies reported a stronger external pressure (citizen demand, influence from business, advocacy groups, public opinion and media). The findings might imply that public institutions that are more emerged in external pressure possess more capabilities in dealing with communication technologies, thus, have built capabilities in dealing with communication technologies.

The Information Richness Theory (IRT) (Daft & Lengel, 1984) has been widely applied by IS scholars. IRT posit that the different media vary in their ability to facilitate users to communicate and change understanding as being more rich or lean. Richer media allow more social cues (the different ways that information can be communicated such as tonality and face expression), more natural language, more direct feed-back and more personalization. Rich media facilitates communication where ambiguity is present. The theory has been used for ranking different media in order to prescribe which media should be used for what purposes. The ranking of media from richest to leanest from a recent study (from richest to leanest): face-to-face communication, video conferences, telephone, written mail, voice mail, e-mail, chat, asynchronous groupware, synchronous groupware (Dennis & Valacich, 1999). IRT was criticized for not regarding contextual factors and the social construction of the particular communication that is shaped by all parties involved in the communication (M Lynne Markus, 1994). Ngwenyama and Lee (1997) draw on the communicative actions from Habermas’ theory of communicative action as intentional behavior, namely instrumental, communicative, discursive and strategic. Instrumental action is by a person that wants another person to do something. The person, who is supposed to do something (follow the order) will normally reflect upon the appropriateness of the action, “a basic validity claim that is associated with this action type” (Ibid., p. 154), i.e. does the person performing the action have the authority to issue the order.

Communicative action is performed to maintain mutual understanding. This type of action assumes that the actors in the communication are actors in a social context, thus “depend on common language and a shared understanding of the organizational context in order to enact meaning from each other’s communicative action” (Ibid.). This action type will occur until a coherent meaning has established by posing questions and subsequent reflection. Discursive action is initiated when actors need to find agreement for joint action to happen or need to restore agreement after a breakdown. Critical debate and argumentation constitutes this action form and the assumptions of “common medium of communication, shared protocols for interaction, and intuitive (a priori) knowledge of the ground rules of discourse” (Ibid.). Strategic action is concerned with influencing others by manipulating “organizational influence, organizational processes, resources, and ‘the rules of the game’ to their advantage” (Ibid.). The action is perceived as valid when it conforms to the “norm, policies, authority structure, and ‘the unwritten rules of the game’”. When it does not conform, the person who is subject to it can consider it ‘dirty tricks’” (Ibid.). Where IRT understands the recipient of communication as passive and the task is to provide the sufficient amount of social cues so that the message can be understood, Ngwenyama and Lee (1997) argue that communication among persons also “involves the need of the recipient to assess the validity or rightness of what is being communicated” and, if needed, “the emancipation of herself from distorted communication” (Ibid.). The authors conclude that opposed to what is assumed of “most IS research, that the processing of data into information is primarily, if not exclusively, the job of computer hardware and software and that the role of the organizational actor is limited to ‘user’ of both the output and the richness produced by the hardware-software system” (Ibid., p. 164), the interplay of the actors play a role.

Spitzberg (2006) argues that effects from communication technologies have been overemphasized on behalf of technology and understated on behalf of individual and social contexts. He posits that the competence with which an individual uses the communication technology is likely to affect how the individual perceives the technology. From an exhaustive CMC research review, he proposes a model that connects the determinants of CMC competence and posits by citing “there has been relatively little attempt to formulate an integrative theory of the social actor as he or she relates to, and through CMC” (p. 637). Especially about the importance of context for understanding communication processes, the author states that context varies with cultural, chronological, relational, environmental and functional characteristics and that “any attempt to formulate a theory of competence that ignores these facets is necessarily incomplete” (p. 638). See the model in figure 26.

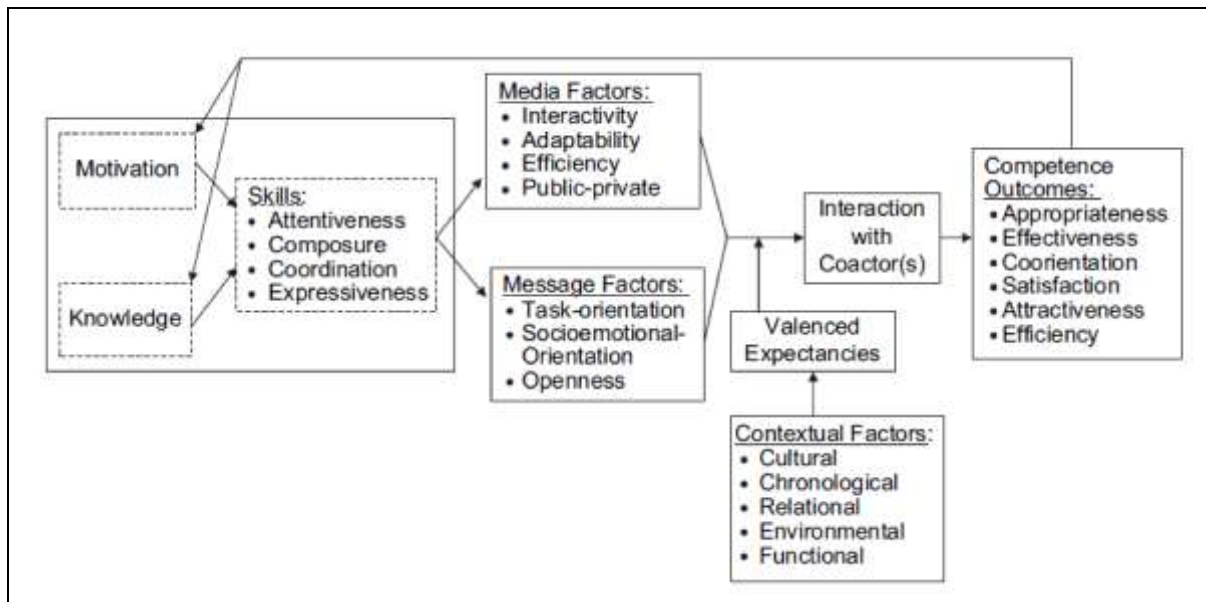


Figure 26 Model of computer-mediated communication competence (Spitzberg, 2006)

Spitzberg illustrates the complexity of the communication competences by comparing to a screen play.

An actor needs to be motivated to give a good performance. Being motivated, however, is insufficient if the actor does not know the script which is to be enacted or the context in which the script is to be played out. Even motivation and knowledge are still insufficient unless actors have the acting skills requisite to translate their motivation and knowledge into competent action. (...) Stage fright may disable an otherwise knowledgeable and skilled actor's performance, and even frightened actors sometimes manage their fears through sheer determination and skill. Spitzberg (2006, pp. 637-638)

Motivation exists as both positive (confidence, comfort, involvement) and negative (social anxiety, apprehension, shyness, apathy and disinterest). Furthermore, motivating forces may be goals, perceived benefits, motives and enjoyment. While motivation has both positive and negative sides, there may be ambivalence in which the weight of one overpowers the other.

Knowledge is represented primarily by "cognitive characteristics reflecting such constructs as planning, uncertainty reduction, familiarity, expertise and other indicators of comprehension" (p. 638). A person can possess deep knowledge on some areas and limited knowledge on other.

Skills is comprised of attentiveness, composure, coordination and expressiveness. Attentiveness is the extent to which the individual is oriented towards others, for instance that polite language from the sender is responded by equally polite language. Composure can be negative in the form of self-depreciation or positive as assertiveness. Coordination skills are the ability to manage in- and outgoing messages, number and length of messages, response time etc. Expressiveness skills are the use of emotions in the communication process. Emotions "attenuate the perceived hostility of mild-to-moderately antagonistic messages, but increase the perceived hostility of highly antagonistic messages" (p. 643). Flaming and lurking are included in this factor.

Both motivation and knowledge are positively related to skills.

Media factors comprise interactivity, adaptability, efficiency and whether the media is perceived as public or private. Interactive is to what extent the application reacts to specific operations, adaptable is the degree of which the technology can be modified and configured to personal use and efficiency is the time and effort required to send and receive messages. More

interactive, more adaptable and more efficient media facilitate “socio-emotional, personal, complex and subtle communication processes” (p. 646).

Message factors comprise task-orientation, socio-emotional orientation and openness.

The author does not elaborate on media and message factors. Skills are positively related to media and message factors.

Contextual factors include cultural, chronological, relational, environmental and functional characteristics. Culture is “behavior, attitude, belief, value and ritual transmittable across generations.” (p. 644) that are embedded in factors such as nationality, ethnicity, race, religion, gender etc. The author finds that gender is the only factor that has been studied in this context. While the author references studies that find no proof of the gender behavior that could be determined externally, it seems that women tend to find their internet relations more intimate than males, woman tend to be more comfortable with other woman in CMC, men tend to form more competitive relationships with mails than with females. The chronological factor tends to be complex and comprise both individual time and time related to the group. Time of day plays a role and the collective time spent on messages. When time pressure increases, messages tend to be more “task-oriented” and when there is limited time constraints, the messages are more socio-emotional. Differences between face-to-face and CMC communication tend to disappear over long term relationships, whereas short termed relationships tend to be less intimate. The relationship has been suggested to be weaker for CMC than for face-to-face, however, various studies show that relationships in CMC are considered as important, as intimate, as close and as stable as face-to-face relationships. The physical environment does not contain the computer, the application etc. while it is included in the media factor. Studies show that performing CMC in the physical room with others has an impact on the communication processes. Finally, the author finds that different tasks moderate the communication processes, “conflicts are different contexts from get-acquainted conversations (...), a meeting is a different context from flirting” (p. 646).

The author suggests that the more skills are adaptive to the contextual factors, the more competent is the communication.

Propositions about *media factors* are that media interactivity is positively related to emotional related functions, media efficiency is positively related to functions of informational character and media adaptability is positively related to CMC competences.

Propositions about *message factors* are that congruence of message content, function, personal functional objective is positively related to CMC competences, and message task-orientation, contextual and media factors, is positively related to CMC competences.

Outcomes As the author states, “there are many possible outcomes of interaction” (p. 647). Outcomes are related to appropriateness, effectiveness, co-orientation, satisfaction, attractiveness and efficiency. Appropriateness is the fit of the message to the context. Effectiveness is the degree to which the intended goal was met, the best possible. Co-orientation is the degree of correspondence between the sender/message content and the recipient’s interpretation. Satisfaction is the positive effect of associated with the fulfilment of positive expectances. Attractiveness is the degree of breadth, depth, intimacy, closeness, commitment and attraction achieved in a relationship. Efficiency is the time, effort or resources with which the preferred outcome is achieved.

All outcomes may not be possible in a given communication process; hence, one or more may be sacrificed when mutually incompatible.

Knowledge, motivation and skills are all positively related to outcomes. It is important, however, to emphasize that it is the positive and negative *expectations* from the contextual factors that moderate the motivation, knowledge, skills, media and message relation to the outcomes. When positive expectations are fulfilled, the outcome is positive and when negative expectations are fulfilled, the outcome is negative. A violation of positive expectations “is likely to produce unpleasant or not preferred outcomes” (p. 650). The model predicts that the outcomes shape the antecedents. Positive expectancies from former communication and a congruent mix of motivation, knowledge, skills, media and message will lead to positive outcome. All other combinations will lead to negative outcomes. Negative expectations from former communication will lead to negative outcome, whether the mix is congruent or not. If the mix is not congruent, it will lead to negative outcome even if expectations from former communications were positive. This highlights the sensitivity of communication.

The last construct is the interactions with others. The model predicts that as the senders competences increases, the competences of the recipient increases and as mutual knowledge, motivation and skills increase, mutual relationship development increases.

The enactment of particular aspects of motivation, knowledge, skill, media, message, contextual factors will achieve a best competence fit with the communicator. The model depicts how the motivation and the applied knowledge, manifested through the selected skills and applied to the selection of media and message all are related to the communication competences. The more degree of freedom, the less constraint on the recipient, the more it is possible for the recipient to optimize the mix of antecedents to ensure that the required computer mediated communication competences can be met by the recipient. The more fixed the antecedents of competences, i.e. the less choice is possible by the recipient, the higher the risk that the required competences mismatch the competences of the recipient.

3.1.12 E-government ethics

The studies of ethics in e-government are limited, both from an administrative research approach and from an e-government research approach; moreover, ethical issues of how citizens are affected by public sector technology use have been of limited interest in the media too (Roman, 2013). Ethics of IS has included increased workload due to extended data collection, making job tasks routine, and a perceived loss of control on the employee side along with surveillance, security, privacy issues, the digital divide and inclusion on the citizen side. Studies of citizen participation in research activities also bear discussion of ethics dealing with citizens (Axelsson, 2013).

Ethical aspects are of special importance in e-government for a number of reasons. First, government, and especially local governments, deal with individual citizens in various ways throughout a life span, moreover, government has more interactions with what might be described as vulnerable citizens, namely the elderly, the unemployed, the sick etc. Further, the government and the citizen are not equal; government may exercise power over citizens and may have huge impact on citizens' lives. Fountain (2001) warns about the hidden assumptions that guide the pervasiveness of technology in public sector, namely the technology determinism, the belief of rational choice and natural selection. The questions of to what extent e-government is appropriate in which situations, which domains, for whom - and more importantly - when e-government is not appropriate are rarely posed, however Bannister and Connolly (2014) state that “whether or not to deploy ICT and how to deploy ICT generally requires judgments about and sometimes choices between values”. The call for an explicit ethical stance arises because we “often identify technology as being deterministically positive in

nature and immune to politics or rhetoric” (Roman, 2013, p. 15), reminding us that there *is* a choice.

Studies of neural actions imply that the moral judgment of an individual is affected by the degree of closeness (Greene, 2003). The example, given by Green is that an individual is more inclined to help an injured person that he comes by than to donate even a small amount of money to a poor family in a developing country. The introduction of e-government, one-stop-shop self-service and digital communications entail a further distance from civil servant to the citizen whom the civil servant is dealing with. How does this impact the practiced ethics of the civil servant? E-government is technologically and organizationally complex. Often, it is people that bring this complex setting work by compensating for bad design, lack of interoperability, lack of accessibility, lack of user-friendly interfaces and logics. What will become of this “gluing-together”-effort if ethics of the civil servant change? Another question arises when public organizations tend to rely solely in the use of digital communication (inclusive social media) in their contact with the citizenry (similar to the case from Wastell and White (2010)). This fact combined with the exclusion of certain groups of citizens from the digital media poses a major ethical challenge of power reinforcement (Schlozman et al., 2010).

E-government may also impact the civil servant. Automation from IT may lead to deskilling and reduced control that again might cause public employees to be less engaged. This may have dehumanizing and socially dysfunctional implications (Cecez-Kecmanovic, 2005). Civil servants form relationships with “their” citizens based on norms about how to treat the citizen. On the other hand, they are also informed by this contact, which enables them to correct and compensate for rigid rulemaking or administrative procedures and in that way “protect” the citizen. When this contact with citizens is reduced due to technology, it may entail reduced accountability and moral responsibility articulated as “technology blame” (Roman, 2013, p. 12) and alienation. (Fountain, 2001) warns about the major impact from private sector consultant values on e-government due to public sector applied strategies of buying instead of building. Roman (2013) adds to this concern by highlighting that questions about systems that are not developed in-house tend to focus less on *how* technology works or why it works as it does and more on, whether the system actually works. According to Roman, The study of e-government ethics is essential due to its multivariate and complex nature that would make “certain substantive and tangible changes in administration ‘go unnoticed’ for decades” (Ibid., p. 14), i.e. e-government is so complex that the actors do not notice the ethical violations.

From the critical IS researcher approach, Myers and Klein (2011) propose that the researcher “takes a value stand” that motivates and grounds the research. The explicit value stand enables others to debate and critique the research to further advancement. Critical IS research into e-government, however, must rely on the ethics of public sector.

So, how is it possible to leverage e-government enactment to be able to detect the unintended harmful consequences of e-government initiatives? First, however, it is necessary to define the key notions of value, moral, ethics and ethos. A value expresses what a person believes is important or valuable, for instance, to be honest. Moral describes the good or bad, right or wrong of a given behavior, for instance, it is wrong to lie to my children. Ethics is a set of beliefs about, what right behavior is and what wrong behavior is, what is appropriate and what is inappropriate. The ethics of the example would be that you should not lie to your children. Ethics usually has grounding in general and stable values. Ethics constitute the fixed points from which an organization may navigate; moreover, ethics has a prescriptive form as duties and obligations (Caza et al., 2004). The challenge to ethical rules is that how they apply is dependent on the individual’s perception of the rule. Ethical rules tend to promote the contrary purpose, namely that individuals act as if they need not do more than apply the rule, as in “work-

ing by the rules”, where no contextual flexibility is present. The notion of ethos provides some help. Where ethics describes a continuum from what is wrong or inappropriate to what is right or appropriate (normal, neutral), ethos describes the continuum from what is right or appropriate to what is perceived as a state of “flourishing and vitality” (Ibid.).

From a review on public sector values, Bannister and Connolly (2014) synthesize 28 public sector values that are relevant to examine regarding the impact from e-government, categorized into orientation of *duty* (e.g. proper use of public funding and compliance with the law), *service* (e.g. responsiveness and transparency) and *socially* (inclusiveness and fairness) see table 6. These values are formulated as something desirable. Bannister and Connolly (2014) state that almost any e-government initiative will impact public values and different initiatives will impact different values.

Table 6 E-government value impact (Bannister & Connolly, 2014)

Regulative	Service	Socially
Responsibility to the citizen	Respect for the individual	Inclusiveness
Responsibility to the elected politicians	Responsiveness	Justice
Proper use of public funds	Effectiveness	Fairness
Compliance with the law	Efficiency	Equality of treatment and access
Efficient use of public funds	Transparency	Respect for the citizen
Integrity and honesty	Service to the citizen	Due process
Facilitating the democratic will	in his or her different roles	Protecting citizen privacy
Accountability to government		Protecting citizens from exploitation
Economy/parsimony		Protecting citizen security
Rectitude		Accountability to the public
		Consulting the citizen
		Impartiality

In analyzing the equality value, the authors state that impact from e-government may lead to less capability for government to offer non e-government services for the excluded, thus the transformation may in fact be negative. Regarding respect for the citizen, the authors state that “technology cannot (yet) substitute for human flexibility, courtesy, empathy, humanity, creativity and imagination”; however, they hesitate to elaborate further into the negative consequences. Two assertions are given from the authors that may be questionable. Like Lee (2010), the authors foresee that as technology automates much of the routine operations, public organizations will be able to free up time to increase the level of service to the ones that need it. This observation does not seem to have empirical ground. Second, they posit that “there is no strong reason to believe that ICT will have a significant impact on justice” with no empirical or scholarly references (Ibid., p. 125). Such a rock-solid belief in the ability of the legal system to withstand impact from e-government contributes precisely to hide this potentially important issue from researchers and practitioners.

The authors warn that a balanced e-government implementation with respect for the citizen may only happen “if the values of efficiency and cost minimization do not dominate the value of respect for the individual” (Ibid.). The authors clearly state that the transformation of public sector by e-government “can be for worse as well as for better” (Ibid., p. 119) and they pose the rhetorical questions of whether e-government increases fairness, improves or reduces inclusion or makes public employees more or less accountable to the citizen.

Of those values that would be able to relate to negative impact or harm are responsibility to the citizen, proper use of public funds, compliance with the law and rectitude (duties); service to the citizen in his or her different roles, respect for the individual (service); and inclusiveness, justice, fairness, equality of treatment, equality of access, respect for the citizen, due process, protecting citizens from exploitation (socially).

Drawing on the warnings from Roman (2013) about the impact from e-government on civil servants' engagement or access to valuable knowledge from citizens, it is notable that Bannister and Connolly foresee no impact on government that indirectly will impact citizens. The authors reason over transparency, equality of treatment and access, integrity and honesty, and respect for the citizen. The study is limited to the organizational view and it is not clear whether the framework is applicable to local government, to agencies, to central government or to the public sector as such. There is a reference to some countries making e-government mandatory (the UK, Denmark). Bannister and Connolly do not address the challenge of how to deal with values in reality. Values are only connected to the organization through situated and real actions performed by humans (Caza et al., 2004). Further, it is not clear whose values the authors address. Roman (2013) argues that different interest groups (politicians, managers, front-line employees, IT-professionals within the organization, external IT-professionals and consultants, and IT vendors) do not necessarily have the same interests or values and as he states “[c]learly delineating the powerful interests and interests groups and the dynamics that make them powerful becomes indispensable for generating non-naïve understandings of the ethical implications of e-government.” (Ibid., p. 7).

Rose et al. (forthcoming) examine the prevalent values of 30 Danish local government managers that have responsibility for e-government initiatives. They find that values may be distributed into four ideals, namely profession, efficiency, service and engagement and that managerial held values are *both* congruent and divergent. The authors, furthermore, found distinct sub-relationships. Congruent values can relate as causal, prerequisite, side-effect or synergetic, whereas divergent values can relate as competing, negating or transforming. This adds to the e-government complexity spelled out by Roman (2013) of different value-sets from different stakeholders. This study, further, empirically finds that even within one stakeholder group, values relate in a complex manner. The nuanced view on value relationships, allows for interesting insight. For instance, the service ideal implies that while development and implementation of new technology is costly, efficiency may not be achieved if the old channel is not closed, which would impact the service ideal. The engagement ideal implies technology use to allow citizens to participate in administrative and political affairs, however, this might make decision making processes both more complex and lengthy, entailing a drop in efficiency and service. The framework, thus “opens up many value prioritization questions for discussion” (Ibid.). The authors find it surprising that scholars adopt a congruent view of values (as Bannister & Connolly, 2014) and suggest taxonomies, where values are assumed to be compatible and notes that “[t]his is possibly enabled by a pronounced tendency to discuss values without any empirical frame of reference” (Ibid., p. 23). Finally, they note that while values clearly are individually held, “it is less clear that all values supplement all other values, or that value confusion translates into successful e-government initiatives” (Ibid.).

Pratchett and Wingfield (1996) investigate the changes of the perceptions and values of public employees from the New Public Management reform in the UK in the 1990es, where the citizen is regarded as a customer and the different public sector entities are managed in the manner of private sector ideals of performance schemes and decentralized economic accountability. The authors worried that the immense organizational and cultural changes of local government was “altering the core beliefs and values of employees, and eroding the sense of public service ethos” (Ibid., p. 640) (the authors use the term “public *service* ethos”, which in other literature is designated “public *sector* ethos”, I will use the latter). The belief of the authors, contrasting Rose et al. (forthcoming) and Bannister and Connolly (2014), is that to understand the change of beliefs and values, it is necessary to approach the public sector as such at the institutional level (for instance, as Fountain, 2001; Scott, 2008). The public sector ethos is understood as an institutional force, which serves an important role under a period of immense change by offer-

ing stability to individuals by “providing symbolic reassurance” and by its own inertia, counteracting the changes opposed, “[i]t is the common denominator that provides a shared appreciative system across a diverse range of organizational and professional boundaries.” (Pratchett & Wingfield, 1996, p. 654). The authors derived the public sector ethos from literature and empirical findings and propose a public sector ethos framework consisting of accountability, bureaucratic behavior, public interest, motivation and loyalty.

Accountability is in essence the obligation of civil servants to accept the legitimacy of politicians and the processes of democracy. Civil servants are supposed to be committed to implement political decisions – and hierarchically derived decisions – regardless of their own beliefs or opinions. Public employees expect the same accountability from other public employees.

Bureaucratic behavior refers to the characteristics of Weberian bureaucratic ideal as honesty, integrity, impartiality and objectivity etc.

Public interest must be pursued by civil servants. This notion entails that the public employee is not bounded to serve only the organization in which they are employed or the professional function that they carry out, but are committed to working for the wider interest of the community they serve and for the “public good”. They believe that the public sector and the particular organization are working for the “public good”.

Motivation for the civil servant is not profit. Motivation, instead, is related to the feeling of “doing something of value to the community” (Ibid.), motivation is altruistic.

Loyalty of the civil servant is multivariate. The civil servant “operate within a complex and often ambiguous set of personal and organizational loyalties.” (Ibid.). This includes the professional function, the manager, the local community, the local political level, other public institutions, the government etc. The public sector ethos, thus, is “characterized by inevitable conflicts between the various loyalties of public servants which highlight different values and provoke different responses depending upon the organizational, professional and functional locations of individuals” (Ibid.).

All the scholars presented until now have been concerned with the existent ethics, set of values or ethos, the normative approach has either been neglected on purpose (Rose et al., forthcoming), not addressed (Bannister & Connolly, 2014) or lying underneath. Cooper (2004) delineates three theoretical questions to public administration ethics. First, the question is *whose* ethics to follow? Cooper highlights four approaches, namely the constitution, the citizenry, the virtue and the public interest. To ground an ethics in the *constitution* and interpretations from higher court ruling is argued to constitute stable codes, grounded in the history and culture of the people, which stand on their own right. This approach is not concerned with defining codes of conduct because it is embedded in the constitution and already given. Based on the *citizenry* means that the civil servant acts as a professional citizen with certain skills and resources as an integrated part of the citizenry. This view implies “encouraging their [citizens] participation, being accountable to them, viewing them as the locus of ultimate administrative loyalty, respecting the dignity of the individual” (Ibid.). Ethics based on the *virtue* of the individual do not apply a list of attributes, however one set of codes are given to demonstrate the different approach in this view, namely “superior prudence, moral heroism, caring or love for humanity, trust in the citizenry, and a continuing quest for moral improvement” (Ibid.). This approach suggests that civil servants on a regular basis judge the morality of each other’s lives not to be judgmental but to examine, question and reflect on the ways of other public servants in able to collectively advance public virtue. The author claims that even though immensely researched and widely used, the notion of *public interest* still remains vague. However, it serves as a reminder for civil servants that particular actions should serve the public rather than

the particular and Cooper cites research which argues that despite its vagueness, “the words ‘public interests’ (...) remain in use in the realm of practical government” (Ibid.).

Another big question about ethics in public administration regards the loyalty of the public employee to the organization versus the loyalty to “what is right”, i.e. to the citizenry, to the public interest or something else but bigger. In the Weberian bureaucracy the employee is bound by the hierarchy and must follow orders and ultimately, the citizen must be accountable to the political decision. Cooper reflects from experiences with ethics workshops with public servants and on the situations employees report on: “[Something] [t]hey knew was violating someone’s rights, violating the law, draining the organization’s resources into someone else’s pocket, demeaning someone inside or outside the organization, doing things that poisoned the environment and placed human life at risk, grossly abusing power for personal ends, or regularly lying to the public and their elected representatives. But, they had either felt impotent to act or had acted and suffered significantly” (Ibid., p. 402). Cooper has no solution to this dilemma, but raises thoughts about “effective dissent channels, policies to encourage ethical conduct, and protect employees from retribution when they act with moral courage.” (Ibid.). He points to reflections as a means, reflections that go deeper into the characteristics of the situation, where ethics are violated and describe the changes in the organization that would be necessary to prevent the particular bad action from happening and/or preventing the employee from acting against it. Fox (2001) attempts to bridge the dilemma of being loyal to bureaucracy or loyal to others in the cause of right as “to follow organizational dictates until and unless their implementation severely shocks the conscience of the administrator. Then the redundant, auxiliary system of personal or professional ethics may kick in” (Ibid., p. 112).

A third big question that Cooper poses is when to treat people equally in order to treat them fairly and when to treat them unequally? He argues that the “burgeoning of assertive diversity” in society entails that if administrators treat all citizens after the same standardized schema, most citizens will frequently feel unfairly treated. If disabled persons did not have parking slots close to the entrance of town hall, their accessibility to the citizen service center would be worse than those not disabled. The challenge is that sometimes we need to treat citizens the same way, but at other times, we need to treat citizens differently in order to maintain fairness. The big question is which criteria to apply to make that decision? The author does not see any easy solution because these are “matters of power, passion, and politics that are not likely to give way to reasoned argument” (Ibid., p. 403), but he argues that scholars can assist practitioners by being explicit about the criteria for treating people differently.

Thompson (1980) outlines another practical aspect about considering ethics in his article about the “problem of the many hands”. The enactment of an action within a given public institution involves a multitude of known and unknown individuals. If something goes wrong, who has the responsibility? The politician that made the formal decision, the advisor that informed the politician before the decision, the employee that handled the particular case or the manager that directed the case to the employee? One stream of argument of consequences of collective responsibility is that all involved are responsible or no particular individual is responsible, neither of which may be satisfactory. The author argues that personal responsibility is possible within the collective by proposing that an individual is morally responsible if “the actions or omissions of the individual are a cause of the outcomes” and “these (...) are not done in ignorance or under compulsion”.

How should an ethical behavior be ensured? Ekhaton (2013) designates four means, namely a code of conduct, a regulatory body, transparency, control and prevention, and supra-national institutions. *Codes of conduct* may act as a guide of individual behavior, but can also be problematical. While codes are enacted in situ by individuals, they are subject to interpretation, thus

may not entail the same behavior in different personal and organizational contexts. Second, codes are formulated by those in power, thereby not reflecting the needs of the powerless. Third, codes may be formulated to legitimize the behavior of those that formulated the code. Lastly, a finite set of codes cannot cover an infinitely complex world. A *regulatory body* may be able to decide on ethical behavior on particular incidences, hereby ensuring common criteria for ethical behavior. The downside is that the institution will be sensitive to political or economic pressure from those in power. *Transparency* can maintain ethical standards by disclosure of information that will enable the citizenry to more closely follow the activities of public organizations and individuals. *Control and prevention* includes fiscal scrutiny, protection of whistle-blowers, encouragement of public servants to report unethical behavior and public sector consultation with the citizenry during planning and operations in public sector. *Supra-national institutions* (e.g. the UN, EU) may regulate and maintain ethical behavior that commits national governments to ethical behavior.

3.2 Deficiencies in e-government research

E-government scholars agree that e-government is complex, due to various, often inconsistent political and administrative goals from various stakeholders, complex relationships between IT departments and application departments, very different functional domains, complexities of technologies including interoperability and operational silos, the various needs of different groups of citizens, the challenge of how to involve such a disparate group as citizens etc. It appears paradoxical; however, that leading articles, thus, treat the major constructs of e-government (government, services, technology, and human actors) very superficially as generic constructs and infer from particular instances or do not report on specific attributes, as if attributes of government, service, technology or human actors have no significance for the studied e-government issue. In this section, I have displayed the common understanding of e-government as including government, services, human actors and technology. I will conclude on the different notions about the apparent deficiencies.

Government is treated on a conceptual level with little impact from functional, organizational or institutional characteristics. The importance of the particular level of government and relations between levels of government are not studied. Yildiz (2007) addresses the oversimplification of e-government and recommends evaluation of not only the outputs but also “the processes that shape the management of e-government” and the intergovernmental relations in the form of “how does national e-Government affect local e-Government?” (Ibid.). Yıldız (2012) in his “big questions of e-government” states that e-government research “only focus on the measurement of the availability and development of web sites and online services (...), thus misses the organizational and cultural change that is necessary for e-government to succeed (Ibid.).

Services are treated as a generic “thing” that is delivered from the public organization to the citizen, neglecting the nature of a service and the nature of the particular service. Highlighting the nature of a service as a process that is coproduced by public sector and the citizen in the moment, S. P. Osborne et al. (2013) provide a convincing argument against this view. Further, researchers infer from studies of a particular service to knowledge about e-government *per se*. The studies of different services (Venkatesh et al., 2012), the distinction between service content and delivery (Tan et al., 2010), the distinction between services and communication technologies (Li & Feeney, 2014) and the proposed service taxonomy (Nusir et al., 2012) indicate that such simple view of e-government services may limit the value of the research. The European Commission use of services, derived from life events, claim to constitute a more comprehensive approach to e-government services (European Commission, 2012).

Human actors are primarily seen as the citizen. The citizen is approached as a generic actor, where the characteristics of the citizen is limited to moderate the importance of a given independent construct, but where the significance of the citizen's personal characteristics, life situation, preferences etc. is not included. The study from Cullen (2005) argue that this is not necessarily so. The impact from citizens' preferences on e-government service perception (Venkatesh et al., 2012) and the formation of four citizen segments based on service preferences provides the argument that a simplistic view of a generic citizen may invalidate e-government research that perceives the citizen as a generic factor. Furthermore, the absence of the public employee as an object of study is notable. Ndou (2004) highlights the employees as an important actor and states that "the relationships, interactions and transactions between government and employees in fact constitute another large e-government block, which requires a separate and very careful handling" (Ibid., p. 5).

Technology is also treated as a generic notion even though a framework has been provided (Ebrahim & Irani, 2005) and advice has been given about "going back and finishing the job" regarding interoperability and siloization (Bannister & Connolly, 2012). Fountain (2001) presents a framework that offers to question the taken-for-granted assumptions of technology determinism and insists that technology, the way it works in the real setting is different from what she designates objective technology and that this entails uncertainty about outcomes.

From an e-government literature review, Heeks and Bailur (2007) find that most research draws on a technological deterministic perspective, attributes technology with positive outcomes, draws on positivist research approaches with very little qualitative empirical studies, few practical recommendations to e-government practitioners and very little critical research. These trends were confirmed in paper 1, which extended the review period to 2010.

E-government research may deal with the multitude of barriers for adoption but offers very little advice about what to do about them. Even though the majority of e-government studies originate from the US and Europe (Heeks & Bailur, 2007; Hofmann et al., 2012; Nripendra P. Rana et al., 2013), a range of case studies from different countries exist (M. P. Gupta & Jana, 2003; Ndou, 2004; Schuppan, 2009; Tan et al., 2005), showing that the direct influence of ethnic culture on the enactment of e-government has not had great attention (Akkaya et al., 2010). The longitudinal, qualitative, grounded theory-based study from Fidler et al. (2011) about the role of "Wasta" in Jordanian implementation of e-government is a notable exception. "Wasta" is explained as "mediation or intercession", a sort of bribery or corruption, but more than that, it is when someone with more seniority from the tribe "takes care of things", in practice, it involves paying civil servants for services. The authors conclude that Wasta leads to over-staffing of ill-qualified people, wrong contractors being awarded public work, low e-government priority and has a major impact on e-government implementation. Hence "the culture is the principal reason for the difficulties faced in e-government implementation" (Ibid., p. 11). No studies in the leading e-government articles treated e-government related to different cultural impacts, which is remarkable since the influence of culture on organizational settings has been accepted for decades (Hofstede, 1991).

Furthermore, e-government researchers may not be aligned with current trends in real life e-government. Countries are beginning to perform mandatory e-government (European Commission, 2012). E-government research has not been examining the impact and implications of mandatory e-government (Chan et al., 2010), under which rule, many taken-for-granted insights of e-government may need to be revised (Brown et al., 2002). Actually, most of the e-government adoption research, which is pointed to the primary goal of how governments can convince citizens to apply e-government, may be of very limited value in the manda-

tory context. It may also introduce new subfields as for instance the emotional impact on citizens (and civil servants) as indicated by Brown et al. (2002).

For dissemination purposes, e-government has in this section been presented as if little development in time has occurred; this is not entirely true. Our literature review of leading articles (paper 1) showed that research went from being overly technological deterministic in the first five year period (2001-2005), whilst becoming more socio-technical in the last period (2006-2010). The research from the last period also tended to be slightly less overly optimistic about impact from e-government, though still optimistic in general. Chadwick and May (2003) defined three approaches to e-government, namely managerial, consultative and participatory regarding the role of the citizen. The authors found only a managerial approach in the review of policy papers. The managerial approach views e-government as a means to increased efficiency and citizen satisfaction. We found the exact same pattern examining research papers. However, more scholars in the first period involved e-democracy and participation in the e-government definition in the first period than the last – though it was not reflected in the actual research reported.

Savoldelli et al. (2014) conducted a bibliometric analysis, covering research, policy papers and practitioner sources on the most cited e-government themes during 1994-2013. They found that until 2010, most of the concern had been on technology and the operation of e-government. From 2010, the authors claim that "this period sees also a broader debate on governance reforms. Within this context, the 'political/institutional' barriers have been increasingly singled out as the most important obstacle for the full take-up of e-government services" and about the implications that "with particular reference to 'lack of citizens' participation to the policy making process' and 'lack of measurement system on e-government process performances and outcomes' e-government adoption barriers are connected with citizens' lack of trust in government and the lack of involving citizens in the decision-making processes and lack of an e-government policy framework that can be applied at local level" (Ibid., p. 567).

RESEARCH APPROACH

4.1	My stance	71
4.1.1	Critical Research	71
4.1.2	Participatory design	74
4.1.3	Engaged Scholarship	75
4.2	Theoretical foundation	79
4.2.1	Institutional theory and public sector	79
4.2.2	Technology enactment.....	81
4.2.3	Enacting e-government success.....	85
4.3	The Imposing E-government Harm model	86
4.3.1	Dynamics of the model.....	87
4.3.2	Technology	89
4.3.3	E-government	89
4.3.4	E-government harm.....	90
4.4	Research questions analyzed by the Digital Post Imposing harm model	90

4 Research approach

My stand is that public sector has a special responsibility to ensure emancipation from constraints where the citizen needs to interact with public sector and to ensure good working conditions. I am guided by the stance that technology can and should enhance public institution efficiency and quality of work for the good of the organization and for the society as such. Technology also carries the opportunities to offer new services for citizens and improved work conditions for public employees. Further, and more importantly, I adhere to the necessary and explicit requirement that new technology never must have negative impacts on people. People that are users of (and dependent of) technology become affected by technology and they have a right to have a say and be involved in the design and enactment of the technology.

Whereas what-questions leads to descriptions, why-questions offer explanations for the observed phenomenon and how-questions detail actions that may change the observed phenomenon (Blaikie, 2007), this study is guided by an overall RQ that states a why-question and subsequent how-questions.

Research Question: Why is Digital Post perceived as harmful? How could this have been avoided and how is it mitigated in the future?

Whereas the why-question aim to guide a trail that seeks to understand or explain the social events that lead to the unanticipated negative effects of DP, the how-question is preoccupied with actions or interventions that could have impeded the negative outcomes and avoid it in the future. Implicitly, however, the RQ also carries some what-questions because it is necessary to also describe and characterize the way, DP works in the staff setting and the citizens setting and the tangible and non-tangible effects from DP. The derived RQs are given in the last section of this chapter.

The study applies whatever strategies depending on the appropriateness in a given phase of the study, thus activities of inductive, deductive and abductive character have been performed. I clearly subscribe to the critical theorist paradigm in which the researcher not only strives to understand what and why but also has an explicit commitment to action and intervention, namely to emancipate the oppressed parties.

The world may be real but it is not perceived in the same way by all social actors, hence, the critical researcher rejects the objectivism of positivism and must “expose the nature and origins of false consciousness, to describe the nature and development of social crises, and to provide a plan of action as to how people can affect the transformation of society” (Blaikie, 2007, p. 140). It is important to note that Blaikie underpins that even though researchers that subscribe to critical theory rejects the objectivism of positivism, he does not reject the *methods*.

The research regards clerical staff and citizens as the deprived parties is grounded in three research streams that each represents strong ideologies, namely Critical IS research (CR), Participatory Design (PD) and Engaged Scholarship (ES). CR is founded in emancipation, critique of tradition, non-performative intent, critique of technological determinism and reflexivity (Howcroft & Trauth, 2005). CR is about people and the critical researcher is perceived as having an obligation to expose the negative effects from technology application in order to make the actors understand the need for change (Cecez-Kecmanovic, 2005). PD shares the urge for emancipation and freeing the workers from constraints imposed by technology by means of understanding the practice of the deprived and offering genuine participation in design efforts where workers freely can articulate their needs, experiences and expectances (Simonsen & Robertson, 2012). PD explicitly claims that people that are affected by technology have a right to be involved in decisions about applied technology. PD strongly adheres to an ethical stance

of pursuing a better (work) life. The final inspiration is the Engaged Scholarship approach (Van de Ven, 2007). Van de Ven states that research should solve problems in the real world and that this can only be pursued while the researcher is engaged in collaboration with practitioners. Van de Ven does not merely see engagement as collaboration, but highlights the paramount significance of engaging by actively disseminating results of the research. The research streams and their implications on this study will be detailed in the following.

Myers and Klein (2011) in their “set of principles for conducting critical research in Information Systems” suggest that critical researchers relate their research to specific constructs of critical theorists. This study relates to the power notion of Faucoux, where power is not perceived as stemming from a central force, but rather is understood as the many “small” powers that constraint social behavior. Further, the notion of field from Bordieus as a collection of distinct parties that exert an impact on an organization, guides the analysis. The significance of power in this form and of the forces of the field in understanding of DP becomes clear when these two notions are explicitly declared in advance.

What has been known as institutionalization plays a big role in how public sector organizations behave (Scott, 2008), hence, it is necessary to understand these forces in order to understand e-government (Fountain, 2001). New Institutionalism (Institutional theory as it is called in IS) is the understanding of how regulative, normative and cultural-cognitive forces are imposed to organizations by symbols, relations, routines and artefacts. Further, institutions strive for legitimacy by conforming to forces of an organizational “field” comprised of other actors that work within the same domain (Scott, 2008). The digitization in Denmark with all its actors from Ministry of Finance, LGDK, Local governments, associations of local government CEOs, CIOs, CFOs, private vendors etc. comprise such “field”. Fountain (2001) suggests the Technology enactment framework to be able to understand how institutional and bureaucratic forces shape technology in a way that so-called *objective* technology becomes something else, namely *enacted* technology, which may have unpredictable outcomes. As outcomes, Fountain explicitly focuses on unanticipated technology impact on people. The ability to perceive enacted technology as different from objective technology brings forward the hidden assumptions of technology determinism and rational choice. Viewing the bureaucratic characteristics of public organizations and the institutional forces, Fountain offers an analytical lens to understanding how enacted technology might change public organizations and the institutional forces. Institutionalism theory and the Technology enactment framework comprise the theoretical foundations for this study.

E-government scholars have directed immense attention to assisting governments achieve the promised performance goals from e-government by examining barriers and success factors (e.g. Chircu, 2008; J. Ramón Gil-Garcia & Helbig, 2007; B. Gupta et al., 2008; Luna-Reyes et al., 2012; Nurdin et al., 2011). Common for these studies are a positivistic approach, that e-government effects can be measured, planned for and achieved. A contemporary e-government success model (R. J. Gil-Garcia, 2012) depicts how environment (political, societal and economic factors) together with the organization and institutional forces affect the e-government success. From a discussion of the e-government success model and related to the Technology enactment framework, I suggest a model to enable the critical researcher to be aware of and understand negative impacts of e-government to people as the *Imposing e-government harm* model. Finally, in this chapter, I instantiate the Imposing e-government harm model to the specific context of DP and derive the RQs that follows from the overall RQ.

4.1 My stance

4.1.1 Critical Research

Critical Research (CR) is characterized by a great variety of empirical focus, applied methods and underlying theories and thus exhibits internal contradictions and tensions (Cecez-Kecmanovic et al., 2008). CR may not even be recognized as a legitimate approach (Myers & Klein, 2011). The following is not an attempt to present a comprehensive review of CR, but merely an account of the chosen CR factors that most thoroughly facilitated the purpose of this particular study.

CR is a reminder that applying IS is about *people* and not only about managerial goals of increased efficiency and efficacy regardless of human costs (H. Richardson & Robinson, 2007). The purpose of CR is “to expose through critique of the illusions and contradictions of social existence with a view to enabling and encouraging social change” (Ibid.). As challenging the status quo and those in power, conducting CR may be a dangerous and painful process for the researcher. CR is about concerns for domination, power and control and achievement of liberation, empowerment and emancipation and it is both practical and has “eminently practical and essentially democratic purposes” (Cecez-Kecmanovic, 2005). CR strives to reveal the unrecognized negative impact that is enabled or supported by technology and do it in such a way that need for change is obvious. Moreover, by providing knowledge, it is the aim to help the marginalized - or dominated - self-emancipate. Critical researchers will pursue these purposes even if they seem utopian, in the faith that they will have at least some effect in another setting. They will refuse to participate in research activities that legitimize negative impact of technology and feel a responsibility to the disclosure of it. Cecez-Kecmanovic further states that CR is “based on the conviction not only that it is legitimate but that it is indeed an obligation for a researcher to actively engage in the transformation of IS practices that will contribute to a more democratic workplace with greater degree of autonomy and human agency, and ultimately lead to less repressive and more equitable social relations.” (Ibid., p. 23). Further, “[t]he critical researcher is an advocate for and activist in social change” (Ibid., p. 16).

Howcroft and Trauth (2005) in their handbook of CR outline five key themes of CR, though they should not be understood as rigid criteria:

Emancipation – to help free individuals from power relations and remove causes of alienation and domination. The authors acknowledge the fact that one person’s emancipation may constrain another person.

Critique of tradition – to disrupt the status quo, encourage dispute, which necessarily will “upset existing patterns of power and authority” (Ibid.) and to question the taken-for-granted assumptions of status quo by including a broad context of the organizational setting of the research, e.g. political, historical, economic and ideological. Not only critique of the status quo, however, but also that the way forward cannot be altered is pivotal. Oppression of workers by the organization is a specific issue as are other marginalized groups. While this may lead to research that is subject to being opposed, thus being perceived as negative, the authors stress that researchers should “suggest alternative and radically different view of the world, one which emphasizes change but in a more positive way” (Ibid.).

Nonperformative intent – the denial of managerial and economic efficiency as the only guidance for organizational development as opposed to a concern for social relations. This is seen in opposition to positivist and interpretive research, which aim to create knowledge that supports the efficiency regime. Technology has been argued to reinforce existing power relations. The underlying assumptions and justification of technology to deliver cost performance goals

is of special concern to the critical researcher. First, the focus on business functioning and achievement of performance goals may remove focus from the complex social and organizational context, thereby missing the opportunity for deeper and more significant change. Second, if design is narrowed to achieving performance goals, the wider organizational, social and political impact is not foreseen. Finally, managers may be blinded by one particular IS solution to achieving performance goals and thereby overlooking other types of solutions that may both achieve performance goals and wider social and political goals (Ibid.). This may have “dehumanizing and socially dysfunctional implications (...) [such as] fragmentation and routinization of work, loss of discretion by employees, power centralization and increased control over employees, alienation, mistrust” (Cecez-Kecmanovic, 2005). Moreover, this may even hamper the achievement of performance goals.

Critique of technological determinism – the assumption that technology evolves automatically and that development is determined by technology. Technological development should be understood in a broader social and economic context. Critique of the ideology that technology drives the development and that more technology is always better.

Reflexivity – which is grounded in the denial of objectivity and “[i]n doing so it [CR] questions the validity of objective, value-free knowledge and information that is available, noting how this is often shaped by structures of power and interests” (Howcroft & Trauth, 2005). The choice of research topic and methods has consequences and the researcher must perform self-reflexivity regarding the involvement in activities that “perpetuate global inequalities and existing power bases within society” (Ibid.).

H. J. Richardson and Howcroft (2006) describe the three tasks of CR as pursuing insight, exposing critique and formulating transformative redefinition. Insight refers to the “process of seeing how various forms of knowledge, objects and events are formed and sustained, highlighting hidden or less obvious aspects of social reality” (Ibid.). The task is to relate the meaning of empirical data to the context, which affects how the meaning is created. The researcher is concerned with the conditions that constitute the background for the meaning and interpretation by the actors. The researcher is not reduced to observing the world from a presumably objective view but is also aware of the forces that are behind the events, actions and values. Critique “challenges many of the taken-for-granted assumptions, beliefs, ideologies and discourses, which permeate IS phenomena” (Ibid.).

Critique builds on the achieved insight but addresses the wider implications, especially “power constraints, repression, ideology, social asymmetries, and technological determinism that give priority to certain ways of viewing the world” (Ibid.). The authors highlight this as a crucial aspect of CR in order to hear the “many voices that have been marginalized at the expense of the dominant view” (Ibid.).

Transformative redefinition requires the researcher to formulate tangible interventions, which are based both on critique and insight, but also on an understanding of the empirical setting that will lead to the desired change. The authors admit that it is the most difficult. The philosophy is that there is “nothing inevitable about what technology we have and how we use it” (Ibid.). Transformative redefinition seeks change in a more positive way and suggests a radically different world view. In doing this, critical researchers – to some extent – may prescribe interventions.

Cecez-Kecmanovic (2005) posits that non-critical IS researchers “serve to passively legitimize dominant technological determinism and managerial ideology in IS practice; that value-free facts cannot and value-neutral research should not be achieved”. According to the author, re-

search involves values and morality because results have effects on people's lives, thus the researcher is required to make their value positions and moral choices explicit.

The critical researcher believes that there exists a social and material reality independent of human consciousness. These realities are subjectively experienced by humans according to historical, social, cultural, political and material conditions and are at the same time shaped by these conditions. The critical research of the impact of implementation and use of a technology in a given setting will not only investigate the experiences, emotions, attitudes etc. of the different groups, affected by the technology but also "investigate the historical, social, cultural, political and material conditions, which shape the purpose and design of the IS, as well as, which meanings the actors attribute to the system" (Cecez-Kecmanovic, 2005). Moreover, CR assume that "beneath immediately observable surface reality, there are dynamic, socially created layers, ideologically inscribed and historically evolving" (Ibid.), which requires the researcher to go deeper and explore hidden structures that shape social action and beliefs.

While the managerial values are inscribed into the technology design to control people "through technical code", the critical researcher aims at exploring this code to reveal these hidden values and thereby generate knowledge about practices that will support improved conditions for the employee. This, as Cecez-Kecmanovic (2005) argues, assumes that "human beings are creative and adaptive, and that they have the potential to think and act in novel ways in opposition to the established social structure and culture" (Ibid., p. 31). Further, she states that the increased managerial control enabled and supported by technology implementation based on managerial values and technological determinism, together with the fact that employees normally are enrolled in design and implementation efforts, have led employees to believe that this is what technology in work situations is about. As a consequence from this socialization "[e]mployees are thereby misled and exploited, made to act against their own interests" (Ibid.). Critical researchers believe that exposure of the impacts of technology and of the reasons for this impact enhance the employees' understanding of their own situation and thereby facilitate empowerment that makes change possible. "By exposing assumptions and beliefs behind an IS implementation and by revealing how social forces and power structures dominate and shape consciousness, thereby producing employees' subjective experiences and acculturating them to feel comfortable in relations of domination and subordination, critical researchers aim to motivate them to (at least) question their position and assist them in undertaking transformative, liberation change processes." (Ibid., p. 32).

According to Cecez-Kecmanovic (2005), a theory in critical research constitutes a "map of the social world" that guides the investigation and understanding, and enables action and change. In doing this, the critical researcher draws on concepts, models and frameworks that are connected to the particular study. The validity of the theory is given by its ability to enlighten and empower actors and help them limit or reduce negative impacts from technology; the strength of the theory is measured in its application in practice. Ultimately, the purpose of CR is to make the world with technology a better place. The particular critical theory is judged by its ability to assist to that purpose and consequently, this also counts for the applied methodologies.

Grounded in the ideas of critical theorists Bourdieu, Foucault and Habermas, and structured by the primary tasks for critical research (insight, critique and transformative redefinition), Myers and Klein (2011) suggest a set of principles that may support the work of the critical IS researcher. Principles 1-3 applies to 'critique' and 4-6 to 'transformation'; 'insight' is presumed to be covered by principles guiding interpretive IS research. The authors underline that the set of principles may not all apply to all instances and only for the type of problem that is covered

by the three theorists. Further, it is of utmost importance that the critical researcher consciously, by reflexivity, applies whichever particular set of principles informs a specific study.

1. The principle of using core concepts from critical social theorists helps researchers formulate appropriate research questions and strategies
2. The principle of taking a value position (this principle drives principles 4-6). This principle stands as a part of the necessary reflexivity to enable critical researchers and others to critically view the research
3. The principle of revealing and challenging prevailing beliefs and social practices. The legitimate use of knowledge and information is stated by the authors as especially relevant in IS research
4. The principle of individual emancipation. This principle challenges that the critical researcher has to deal with are human issues and the existence of something being “unjust, harmful or at least unfair” (Ibid., p. 27)
5. The principle of improvements in society. The principle states that critical research is not merely to create emancipation on an individual level but aims at more structural changes on a societal level
6. The principle of improvements in social theories. In contrast to Cecez-Kecmanovic (2005), the authors suggest that “explicit procedures of evidence giving and the acceptance of the idea of fallibility” (Ibid., p. 28), which in return supports the researcher in reflexivity and thereby adjustment that may improve knowledge generation.

4.1.2 Participatory design

The Participatory Design (PD) research field emerged from the introduction of technology to workplaces in the 1970's. Employers wanted to utilize new technology to make production more efficient, both regarding enhanced speed, fewer errors and new ways of working. The printing industry was heavily affected because printing no longer needed to be done by collecting a table of metal letters, instead, printing could be done entirely with the computer. However, this changed the typesetter's job completely. With the new technology, it became possible to import text and graphics into a desktop publishing application and arrange the different texts and graphics using the application. Actually, there became no need for typesetters anymore. On this background, there was a strike in Denmark for 141 days, which involved nearly all the newspaper companies in the country, pitched battles in the street, a range of support activities and interference from parliament. The typesetters won the battle and managed to keep the computer out of the printing process for five years.

PD scholars were in the 1970'es engaged in – in collaboration with employers and trade unions – finding ways in which technology could be applied to pursue efficiency goals alongside with improved working conditions for employees. The philosophy was to create technology design processes that involved the future users by means of different design tools and techniques using visual, oral, and interactive means. This would help future users both communicate work practices to the designer and elicit knowledge from the designer in order to understand future possibilities and constraints (Bødker et al., 2004).

PD is grounded in participation, practice and design and “offers a way to increase product and service quality because the resulting technologies work better” (Simonsen & Robertson, 2012). The underlying philosophy of PD is that work practices as it is experienced by the workers must inform technology design. Technology must be designed in genuine collaboration with users. The users are not supposed to merely inform the design process. Users have a right to be

heeded in decisions that affect their work situation. Genuine participation is ensured by active cooperation, where participants are actively engaged, drawing on different senses and/or interacting with mock-ups or prototypes, imitating the work situation. It is essential that participants are not limited by use of expert language. “Participation in Participatory Design happens, and needs to happen, because those who are to be affected by the changes resulting from implementing information and communications technologies, should, as a basic human right, have the opportunity to influence the design of those technologies and the practices that involve their use.” Simonsen and Robertson (2012, p. 33).

Practice underlines that PD takes a sociotechnical approach including also the context in which work processes are situated. Further, practice means what people really do and not what is depicted in formal work process diagrams or what workers say they do. It is important that practice informs the design of new technologies because technologies used in the everyday work setting to a great extent shape the work practices and eventually work life. Practice knowledge is also important because technologies both have anticipated and unanticipated effects. PD offers a possibility to discover the unanticipated effects and take these into account in following design iterations.

PD recognizes the design process as a two-way learning process. The designer learns about work practices from the worker and the worker learns about the design process and the possibilities of the technology from the designer. Both designer and practitioner mature from this “mutual learning” process to further reinforce the design process. PD offers activities to facilitate shared experiences and reflection-in-action that informs the design process. Further, design processes enable the practitioner to express themselves, experience and experiment in ways that do not constrain the practitioner by designers or managers. Some PD scholars insist that the design process may be completed only in use (design-in-use) (Blomberg & Karasti, 2012). This is especially the situation, where technology is not developed from scratch, but as an ongoing re-design of an existent system or where generic systems (Bansler & Havn, 1994) are being implemented in a work setting. Simonsen and Robertson (2012) state that applying PD activities in actual technology use settings may offer opportunities other than simulated use involving mock-ups or prototypes. In real technology use, PD activities may reveal “inappropriate, undesirable, or disastrous side effects as well as unforeseen opportunities and unintended advantageous and desirable possibilities” (Ibid.).

4.1.3 Engaged Scholarship

Van de Ven (2007) argues that scientific research has become less useful to practitioners and further, that the scientific advances are limited. According to Van de Ven this is mainly due to scholars and practitioners possessing partial and incomplete knowledge and being inherently biased to any complex problem. He introduces the Engaged Scholarship (ES) as a collaborative process where researchers and practitioners co-produce knowledge. It is not that researchers lack the skills to produce knowledge alone but researchers “don’t have the exclusive right to such production”. The term “scholar” entails “building bridges between theory and practice and communicating ones knowledge effectively” (Ibid., citing Boyer). Van de Ven makes this definition of Engaged Scholarship: “*Engaged Scholarship* [author’s emphasis] is defined as a participative form of research for obtaining the different perspectives of key stakeholders - researchers, users, clients, sponsors, and practitioners in studying complex problems. By involving others and leveraging their different kinds of knowledge, engaged scholarship can produce knowledge that is more penetrating and insightful than when scholars or practitioners work on the problem alone.” (Ibid., p. 9).

Van de Ven distinguishes four major research activities, within which, time should be distributed evenly:

Problem formulation – determination of why, what, where, when, who and how the problem exists by talking to people that experience the problem and consulting research literature. The emphasis is that the problem needs to be grounded in practice. Van de Ven warns that problem formulation is not done to hastily or else “important dimensions of the problem [will] go undetected”. The social construction of the world and the complexity of the world make it crucial to engage scholars of different disciplines and practitioners with different work functions in formulating, situating and grounding the problem. According to Van de Ven, caution should be taken towards practitioners tending to focus on solutions and new ideas in this phase and less on understanding the problem by empirical findings. Scholars, on the other hand, should be cautious about “cowering to the interests of powerful stakeholders”.

Theory building – is to create, elaborate and justify theory and alternatives by inductive, deductive and/or abductive research strategies. This will occur in discussion with knowledge experts and by use of literature review. This activity goes further than “definitions, internal logical consistency and verifiability” in that it emphasizes more creative virtues of theory building. 1) abductive reasoning, which resolves an anomaly observed in the world, 2) logical deductive reasoning to define terms, specify relationships and conditions when they apply and 3) inductive reasoning to empirically evaluate the model. Van de Ven states that scientific advancement is more likely if the study “juxtaposes and compares competing plausible explanations”.

Research design – to develop models for empirically examining the theories, which requires access to knowledge about research methodology and the techniques of different research methods as well as knowledge of how to get access to data and the practitioners that are embedded in the problem.

Problem solving – by communication, interpretation and applying the “empirical findings on which alternative models better answer the research question about the problem” (Ibid., citing Boyer). Van de Ven is opposed to the “traditional” way of ending a research project by making a report as one-way communication and the assumption that all good ideas get adopted. The dissemination of a “report” (or other formats of the initial findings) is, however, a prerequisite to the much more important following steps. The report is not understood as having a fixed meaning. The research findings are “open to multiple and unlimited meanings, interpretations and actions among participants”. He calls for a more engaged communication by the researcher, i.e. to disseminate, be curious, listen to the reaction and interpretations by practitioners and other scholars to the findings and finally – and most important – to converse: “At the knowledge translation boundary, conversation is the essence and the product of research” and this demands a participant view. Further, conflicting views may arise that “entail an even more complex political boundary where participants negotiate and pragmatically transform their knowledge and interests from their own to a collective domain”. Van de Ven states that numerous interactions are required to “share and interpret knowledge, create new meanings and negotiate divergent interests” and that this is exactly what an engaged and constantly repeated collaboration between researcher and practitioners through all the four research activities entail.

The philosophy that underlies ES is that there is no absolute truth in scientific knowledge. Van de Ven subscribes to a constructionist epistemology, where representation and understanding of the real world is a social construction, thus, does not exist independently of the observer. First, all data is theory-laden and embedded in language, second, the social world is too complex to be understood by a single person, “consequently, any given theoretical model is a partial representation of a complex phenomenon that reflects the perspective of the model builder” and “no form of inquiry is value/free and impartial; instead each model and perspective is val-

ue-full. This requires scholars to be far more reflexive and transparent about their roles, interests, and perspectives” (Ibid.).

Van de Ven distinguishes forms of engaged scholarship in two dimensions, namely, what he calls research purpose and research perspective. The *research purpose* is essentially driven by the research questions, which set the boundary for the study and it may be to describe, explain and understand a phenomenon or to evaluate or change. The *research perspective* delineates whether the involvement of the researcher is attached (inside) or detached (outside), see characteristics in table 7. Research from the inside can provide knowledge about how the problem is grounded in reality while research from outside can provide knowledge about the outreach and variance of the problem.

Table 7 Characteristics of engaged scholarship depending on research perspective

Dimension	From the Outside	From the Inside
Relationship to setting	Detachment, neutrality	Immersion, "being there"
Validation basis	Measurement and logic	Experimental
Role	Onlooker	Actor
Source of knowledge	A priori	Emergent
Aim of inquiry	Universality and generalizability	Situated
Type of knowledge	Universality and generalizability	Idiographic
Nature of data	Factual, content free	Interpreted, contextually embedded

Note that all four types of research share the virtue of ES, i.e. the engagement of the scholar with practitioners.

The resulting four forms of ES (table 8) are explained in the following formulation in e-government context inspired by Medaglia (2012):

Basic research – the researcher controls the research activities, is detached from the empirical setting but seeks advice and receives feedback from practitioners in all the research activities as he aims to describe, explain or predict a social phenomenon. Initially, it may be difficult to engage practitioners in engaged basic research since they might not see it worthwhile providing feedback without getting anything in return. On the other hand, *if* a relationship is established, the practitioners may see the researcher as a “friendly outsider, who facilitates a critical understanding of their situation.” This will apply for reflexive practitioners, who want to learn from their experience. They see the researcher as a safe, impartial listener. Further, they may enjoy the scholarly knowledge that may bring new ideas to the organization from theories or other cases. This kind of informed engagement with various stakeholders constitutes an important source for understanding and grounding of the problem.

Collaborative basic research – in this form, the researcher and the practitioners collaborate in a common interest to produce knowledge about a social phenomenon. The work is organized to benefit from the complementary skills of researchers and participants and either party may in different phases be in charge of the study. Mutual learning is the driver in this activity. A major scientific concern according to Van de Ven (2007), however, is that the influence and power of practitioners may endanger the validity and rigor of the research. Further, organizations might want to exceed decision power over what might be perceived as controversial or compromising findings. Van de Ven notes that these concerns should be undertaken at the initiation of the collaboration by negotiation of roles, rules of engagement and exit, and dissemination and use of findings. Van de Ven cites five recommendations from a study of the evaluation of cross-professional collaboration that proved that “creating a successful collaborative research team is difficult, namely: 1) carefully select researchers and practitioners according to skills, backgrounds, motivation and willingness to work with people of different style and culture, 2) clari-

fy commitment, roles and responsibility, 3) establish regular communication, 4) establish team-building activities and 5) provide time for the team to reflect.

Evaluation research – the aim in this form of engaged scholarship is to “examine normative questions dealing with the design and evaluation of policies, programs, or models for solving practical problems”. Van de Ven associates this form with Design Science and Evaluation Research. The obtained knowledge should enable practitioners to design solutions to their problem. Where basic research is about generating knowledge, evaluation research is about *how* this knowledge is applied. Many cases are necessary to evaluate a policy or a program and the researcher needs to be detached from particular cases in order to maintain impartiality and legitimacy. Van de Ven poses three key decisions, which require negotiated consent from practitioners (or “those assessed”), namely 1) who decides what criteria to apply for evaluation of success? 2) Whose conceptual framework should be used to guide the assessment? 3) How should the study be conducted to facilitate learning and use of evaluation study results among practitioners? (Ibid.).

Action research – in this form of engaged scholarship, the researcher is immersed in the client organization in order to help solve a real problem, which is defined by the client by introducing interventions in the client setting. During this process, scholarly knowledge about the research area is generated. Action research originates from organizational research and is based on a process of stimulus response, where a certain action in a particular setting creates a response where the social action can be connected to a causal model (R. Baskerville & Wood-Harper, 1998). It has the ability to create knowledge about deficiencies in the practitioners’ world that research of a more positivist nature fails to do (Melin & Axelsson, 2007). Van de Ven notes that to achieve such changes demands that action researchers “play the highly visible and proactive role of change agent”.

Table 8 Characteristics of forms of engaged scholarship (Van de Ven, 2007)

Form of Engaged Scholarship	Basic	Collaboration	Evaluation	Intervention
Summary	Researcher conducts and controls study activities with advice of stakeholders	research team composed of insiders and outsiders jointly share study activities to co-produce knowledge	Researcher develops and evaluates policy, design or program for profession or client	Researcher intervenes and implements a change to solve a client's problem
Research question	To describe and explain	To describe and explain	To design and evaluate	Diagnose and treatment
Relationship	Advisory	Collaborative	Exchange	Exchange
Obligations to practitioners	None, but an expectation that researcher will share findings			
With or for stakeholders	With	With	For	For
Who controls process and outcome	Researcher	Researcher and practitioners, partners		Researcher and practitioners, partners
Researcher perspective	Detached/outside	Attached/outside	Detached/outside	Attached/inside

4.2 Theoretical foundation

4.2.1 Institutional theory and public sector

The rational and technological deterministic view on technology (the tool-view, Kling & Lamb, 1999) is that technology is a tool to achieve immediate positive effects and benefits for the organization. Implementation can be planned and full operation will follow. The new system will have been tested and bugs removed prior to implementation, the system will be embedded in the existing infrastructure with the required interoperability. Users will be trained according to new functionalities and user interfaces will be intuitive and user-friendly. The system will support users in their work tasks. This view assumes that social and organizational factors are not relevant in implementing new technology. The focus in this view is on the system and the user.

The socio-technical view (M. Lynne Markus, 2004) acknowledges that organizational factors play a crucial role in technology implementation. Effects from technology may emerge incrementally – if ever, due to an ongoing implementation process, which is of a much more iterative nature with emphasis on user-involvement, unforeseen implications (emergent changes) and adjustment of work practices, organization and technology (Hertzum & Simonsen, 2011). There can be huge and unforeseen implications of technology implementation, including employee resistance. Relationships (employees, trade unions, managers, the internal IT department, vendors) influence and are influenced by the process and the context, which is perceived as complex (including other organizations, legal issues, history, location) (Kling & Lamb, 1999). The focus in this view is on the organization in which the new system will be implemented.

The third view is a specific view on a public institution and embraces more than the organization and the system but also the institutionalization (Scott, 2008) that affects and are affected by both the organization and the technology.

Institutions are “multifaceted, durable social structures made up of symbolic elements, social activities, and material resources. Institutions exhibit distinctive properties: They are relatively resistant to change (...) and need to be transmitted across generations, maintained and reproduced” (Ibid., p. 48). Scott designates *three pillars* that make up and support institutions, namely regulative, normative and cultural-cognitive and the legitimacy depended on these pillars, see table 9. In his analysis of the different constructs of institutional theory, Scott emphasizes the social construction of actors and institutions and the importance of including these constitutive rules in our analysis, hence “[c]onstitutive rules are so basic to social structure, so fundamental to social life, that they are often overlooked. In our liberal democracies, we take for granted that individual persons have interests and capacities for action. It seems natural that there are ‘citizens’ with opinions and rights (as opposed to ‘subjects’ with no or limited rights), (...) and ‘employees’ with aptitudes and skills” (Ibid., p. 65). In this understanding, most of what constitutes the operation of public sector must be understood as socially constructed. Lastly, Scott underpins that a belief in rational choice limits the understanding of institutions to the regulative pillar, hiding the other two.

The regulative pillar comprises the rules, monitoring of the rules and incentives such as rewards or punishment to impact future behavior; regulatory processes may be strict and formal or undertaken in an informal “folkways such as shaming or shunning” (Ibid.). Regulative forces may have the form of coercion but also inducement is included, for instance by means of funding of certain activities. Compliance can be costly and may be overseen. Scott highlights the risk of rule makers being influenced by their own benefits from complying the rules, especially “the role of the state as rule maker, referee and enforcer” (Ibid., p. 52). Laws may not only be complete and concise; within complex or innovative domains laws can be ambiguous or lacking internal consistency, thus must in effect be understood more as normative directions for conduct. Laws are not natural laws but also shaped by institutions. Lastly, rules stimulate emotional reactions. Scott finds that “feelings induced may constitute an important component of the power of the [regulative] element” (Ibid., p. 54). Scott refers to “powerful emotions” as fear, dread and guilt on one hand, and relief, innocence and vindication, on the other confronted with “a system of rules backed by the machinery of enforcement” (Ibid.).

The normative pillar comprises values, norms and roles embedded in the social system. Values refer to the “preferred or desired” and act as standards to which existing behavior can be compared whereas norms specify how things should be done. Normative systems appoint appropriate ways to achieve specified goals. Some norms and values apply to different actors in different situations, which entail roles as perceptions of specific aims and action of specific persons or positions. Roles are prescriptive and designate how actors are supposed to behave. Normative systems impose restrictions on social behavior as well as they empower and enable, hence, “they define rights and responsibilities, privileges as well as duties and licenses as well as mandates” (Ibid.). Feelings connected to norms include “shame and disgrace” when norms are violated and “pride and honor” when being exemplary. The “conformity to or violation of norms typically involves a large measure of self-evaluation, heightened remorse and/or effects on self-respect” and such strong feelings constitute incentives to conformity to the norms (Ibid.).

The cultural-cognitive pillar comprises the shared but subjective interpretation and meaning of symbols, words, signs, gestures etc. determining “what information will receive attention, how it will be encoded, how it will be retained, retrieved and organized into memory, to how it will be interpreted, thus affecting evaluations, judgments, predictions and inferences” (Ibid., p. 57). Compliance occurs because other forms of behavior are inconceivable; the conformed behavior is taken for granted. Negative feelings of not complying are associated with “confusion” or

“disorientation”, positive feelings of compliance are associated with “certitude” and “confidence”.

Table 9 Institutional pillars (Scott, 2008)

	Regulative	Normative	Cultural-cognitive
Base of compliance	Expedience	Social obligation	Taken-for-grantedness, shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, laws, sanctions	Certifications, accreditations	Common beliefs, shared logics of action, isomorphism
Affect	Fear / guild, innocence	Shame, honor	Certainty / confusion
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible, recognizable, culturally supported

Further, Scott introduces the *organizational field* as one of the most important aspects of institutions. The organizational field constitutes a multitude of organizations that work within a specific domain (e.g. e-government) and the public and private organizations, they collaborate with and other parties that influence or are influenced by the field. Scott asserts that organizations are very attentive to other organizations in the same field (Ibid., p. 182) and he indicates that the lens of the regulative, normative and cultural-cognitive pillars also apply to this level of analysis.

Legitimacy is a generalized perception that an institution performs the appropriate actions, assessed and articulated by important others, especially by the organizational field. Legitimacy of an institution can be understood connected to the three pillars. An institution may possess regulative legitimacy when it conforms to the current rules and laws. Normative legitimacy rises from conforming to a morally appropriate behavior and is based on both internal and external incentives. The cultural-cognitive legitimacy stems from conforming to “a common definition of the situation, frame of reference or a recognizable role or structural template” (Ibid., p. 61) and is the most grounded of the three. The forms of legitimacy can be conflicting, for instance, an institution may comply perfectly well with the laws, though still performing morally disputed actions by some actors. Institutional Theorists argue that institutions strive for legitimacy even though it conflicts with, what could be perceived as the basic responsibility of the organization (Mik-Meyer & Villardsen, 2012). The institutions will exhibit conformity to the rules, norms and culture of the field and thereby gain legitimacy, the process designates isomorphism. Institutions can exercise decoupling to cope with tension within the field. To highlight further the institutional content of public sector, it is valuable to include the public sector ethos framework (Pratchett & Wingfield, 1996), see 3.1.11, p. 54.

4.2.2 Technology enactment

Fountain (2001) offers in her seminal work: “Building the Virtual State – Information Technology and Institutional Change” the technology enactment framework to better understand how technology is shaped by organizational forms and institutional forces to yield unanticipated

ed effects that shape the public institution, see figure 27. Fountain highlights the “unexamined premises and assumptions, nearly invisible in most discussions of technology and structure but working in the background (...) that misinform decision making and impede clarity of discussion” (Ibid., p. 84). Fountain especially points to the dominant technological determinism, the belief in rational choice and the belief in natural selection. It is exactly these premises and assumptions that lead to the paramount element in her framework - that technology is not static and stable and has only that one form, which was intended, planned and developed by the designers - but that it will be shaped by the environment. By rejecting the unexamined premises and assumptions and perceiving technology as more than objective, the contribution of the Technology enactment framework is that it “invites to reverse the direction of the causal arrow that lies between technology and structure to show how the embeddedness of government actors in cognitive, cultural, social, and institutional structures influences the design, perceptions, and uses of the Internet and related IT.” (Ibid., p. 88). Both statements are important, that public sector institutions affect objective technology to become enacted technology, and, that enacted technology affects public sector institutions.

The technology enactment framework offers an understanding of technology as objective and enacted, i.e. derived from the objective technology but shaped by the environment. The objective technology is the technology untouched by the environment. To illustrate this major point, Fountain refers to office applications. A particular application has a multitude of different functions that the normal user does not use and the same tasks can be done using the application in different ways. It follows logically that different users have different uses within the organization and that similar organizations will have different use patterns. The same logic is valid for all the components within the technology domain (applications in general, hardware, databases, technical infrastructure, the Internet etc., refer to the DP enterprise infrastructure view in figure 2, p. 14). The flexibility, decomposability and functionality of the technology components make it possible for the actual use of the technology to differ substantially from the objective technology; this is even more true now than 15 years ago when Fountain offered the framework.

The enactment of the technology is due to the embeddedness in the organizational and institutional arrangements. Following institutional theory, institutions seek legitimacy, which entails that technology may be enacted in ways that “reproduce, indeed strengthen, institutionalized socio-structural mechanisms even when such enactments do not use technology rationally or optimally” (Ibid., p. 90). Technological outcomes, hence, will be unsure and Fountain states that outcomes are influenced by “rational, social and political logics” and highlights the uncertainty of “the future effects of its [technology’s] use on individuals, organizations and institutions” (Ibid.). Fountain understands institutions as emerged from “cognition, culture, social structure and formal government systems” (Ibid., p. 93) and is aligned with Scott (2008) that designate the forces “regulative, normative and cognitive-cultural”.

According to Fountain, institutions may change due to the duality of action. Institutions constrain action, but action – at the same time – is the way that institutions are understood and maintained. Especially communication channels are stated by the author (due to being more “fluid”), to have transformative power. Hence, “meetings, forms, memos, correspondence, and training formats simultaneously constrain and enable action.” (Ibid.). The author states that the institution, through changes in action, may alter as a consequence of environmental change, e.g. by economic, political or technological ‘shocks’ (Ibid., p. 93). This phenomenon constitutes the organizational field and the isomorphism process of the institution to achieve field legitimacy (Scott, 2008).

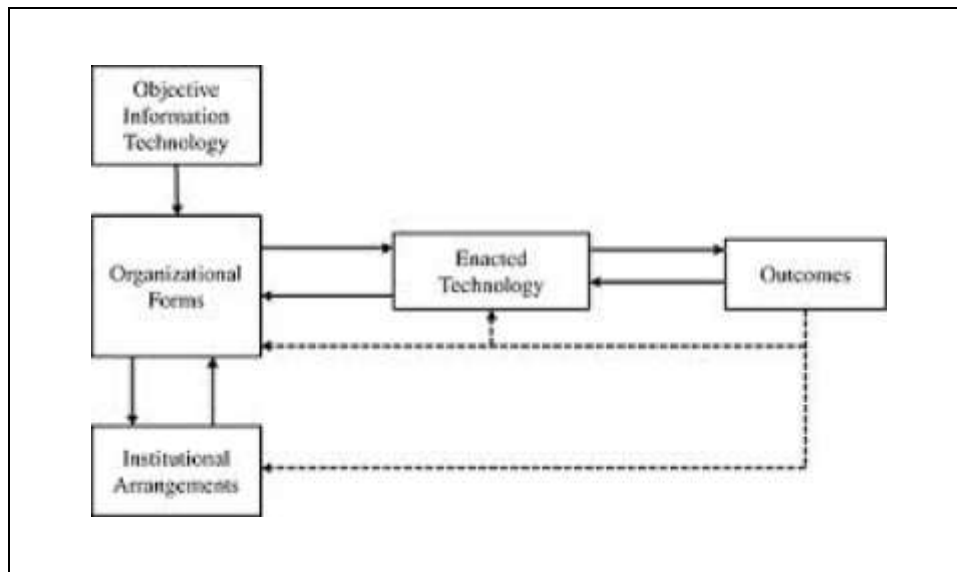


Figure 27 The Technology enactment framework (Fountain, 2001)

Public institutions are accountable for transforming political decisions, rules, laws etc. into procedures and operations that impact citizens' everyday life. To be able to understand how technology will affect public institutions, it is necessary to take into account the logic of public institutions, which is based on the Weberian bureaucracy. Fountain asserts that technology in the public sector cannot be understood without "paying considerable attention to its structural elements" (Ibid., p. 47). By drawing on the concepts of bureaucracy, it is possible to comprehend if technology is changing the public sector, in what ways and the implications of these changes. Fountain distinguishes five important implications of Weberian bureaucracy. First, the existence of functional domains defined by clear jurisdictional boundaries (also known as silos), which is comprised not only by the different administrative entities but supported by budgets, political committees and programs. Second, the solving of complex problems of public sector by means of efficient and robust hierarchies, which is achieved by decomposing of problems and subsequent recombination of partial solutions. Third, the significance of standardized operational procedures, documented in written files constitute rules that officials follow, more "out of habit, obligation or professionalism than of fear from punishment of not following the rules" (Ibid., p. 49). Technology introduces more standardization and rules in public institutions. Fountain asserts that more standardization and rules will further wider use of the Internet in government, hence more e-government and that implications from this are not clear. Fourth, the civil servant is perceived as neutral in the operations of laws and rules and an expert in the conduct of the particular operation; "neutrality is a key feature of professionalism within every democratic civil service in the world" (Ibid.), and in line with Pratchett and Wingfield (1996), however, it is not clear how neutrality is maintained, sustained or weakened by e-government. Finally, the bureaucracy (influenced by Taylorism, the monitoring and control of the workforce to gain efficiency) is characterized by the view on human beings that are seen merely as components of the structure (i.e. the function, job description, position) and not as persons.

Fountain outlines four central elements of bureaucracy connected to use of technology, namely coordination, function, process flow and democracy. Bureaucracy entails many disparate entities and functionalities, which require coordination to operate.

Coordination ranges from mutual adjustments between individual or small groups to supervision of individuals and standardization between entities. Mutual adjustment is "the invisible hand" by which things get done; seen by Fountain as powerful and ubiquitous, thus "important

to the overall argument [of the technology enactment framework]" (Ibid.). The logic is that, it is inevitable that more technology will bring more information and increased communication, but the conditions for performing mutual adjustment are affected negatively because more and more rules are hardwired in the technology (Ibid.), Coordination by supervision follows from the norm that every subordinate only answers to the immediate superior. According to Fountain, this principle has been associated with norms of "good government and professional public management" (Ibid.), hence, they "become more difficult to change even when the rational reason for their existence no longer holds". Standardization is the reduction of needed information that furthers coordination, thus requires less supervision. The work process design decisions that are embedded in technology affect users by limiting their choices and an increase in routine. Standardization, however, also applies to people through socialization in forms of training, reward and punishment systems and norms, hiring and promotion policies and practices etc. This produces not only "coherence, stability, certainty and coordination but also impairment, lack of creativity, groupthink and resistance to change" (Ibid., p. 56),

Function. Public institutions are populated with highly distinctive functional roles. Operators at the "floor" perform the specialized tasks of the department and they are managed by team leaders (without personnel responsibility) and line managers (with personnel responsibility). Depending on the size of the institution, there will be a number of upper managers (head of divisions, directors etc.) and a managing director (executive director, CEO etc.). A number of staff departments will support general management and coordination across the institution (i.e. development, IT, economy, HR, legal affairs, policy making etc.). Fountain claims that technology will affect these different functions differently. Operators may lose control of their jobs because deviation in behavior is reported upward in the system and because of the increased embeddedness of operational rules in technology. Managers to a lesser extent need to control; collect and coordinate their operators due to use of technology. Further, technology will also reduce the need to collect and report upward. Hence, technology may affect immensely the job of the middle manager. Top managers may be affected in opposite ways by increased access to information, namely positively due to access to increased information or negatively, by information overload. Further, executives may perceive loss of power due to increased transparency, thus increased shared information. Fountain finds that different effects from technology on different groups may lead to "negotiation and political contest, the results of which harm implications for authority, power, and resource distribution." (Ibid., p. 57). Further, she points to two functions that are important in understanding public institutions. First, the power of the actors that perform the on-going analysis and rationalization of the organization and the impact they have on the use of technology (academic staff including CIO and the IT department). Second, the fact that academic staff functions in public institutions tend to be regarded as more central for the public institution, thus more important and more powerful than operating staff, which may affect enactment of technology.

Flow. Fountain claims that "process redesign has affected operators and managers far more than executives" (Ibid.) and that efficiency of an administrative entity is heavily affected by the technological barriers between entities that are not connected by the vertical hierarchy. Technology has the ability to support work flows within institutions (across departments) and across institutions. This may also indicate application of technology to support horizontal work processes is hampered by bureaucracy (though not directly stated by Fountain).

Democracy. While technology, and e-government in particular, has been claimed to empower users, enhance transparency, thus strengthen democracy (see 3.1.1, p. 34), Fountain points to the increased use of rules embedded in technology, which are hidden and thus cannot be debated, a "shift from overt to covert control" (Ibid.). This is especially important because public institutions must follow "vague, conflicting goals that result from legislative compromise and

multiple missions” (Ibid.). Further, outsourcing of public operations entails that formulation and technology embedded rules to a greater extent are determined by private sector consultants. It follows that attention must be directed toward “the growing dominance and influence of systems analysis within information-based bureaucracy and their role in the policymaking process.” Finally, Fountain proclaims that “Technology might be enacted to facilitate collaboration, shared information, and enhanced communication. Equally plausible, it may be designed and used coercively to promote conformance and control” (Ibid.).

4.2.3 Enacting e-government success

R. J. Gil-Garcia (2012) suggests an enacting e-government success model (see figure 28), which he claims is based on the technology enactment framework. Gil-Garcia selects the enactment framework to understand e-government success for multiple reasons. First, he claims that the enactment framework is appropriate for analyzing the different stages in the IT process, namely selection, design, implementation and use (Luna-Reyes & Gil-Garcia, 2011). Second, it allows the organization to be the unit of analysis. Third, it was derived from empirical data from public institutions; hence it takes into account public sector dynamics. Fourth, the framework applies to positivist and non-positivist research paradigms and qualitative and quantitative research strategies. Finally, the framework “pays particular attention to institutional arrangements and institutions are essential to understand government phenomena” (Ibid., p. 53). Citing Orlikowski and Iacono (2006), Gil-Garcia stresses that due to the context-dependency of technology, no generic theoretical model would fit. He posits, however, that an instantiation of a model to a given e-government phenomena may apply – in this case, a model to understand the *success* of e-government.

Gil-Garcia includes all the components of the technology enactment framework, namely the organizational, institutional arrangements, outcomes and the enacted technology, however, he introduces some changes and his main focus is different than that of Fountain. First, he adds management strategies and practices to the organizational component, which is primarily due to the power that the CIO has to impact selection, decision, development, implementation and use of technologies in an organization.

As e-government success, Gil-Garcia includes enacted technology and outcomes. The enacted technology refers to the “certain characteristics of the e-government initiative such as hardware, software, functionality, usability or accessibility, but also derived social relations and diverse uses” (Ibid., p. 55). Outcomes are defined as “efficiency, transparency, effectiveness, participation and accountability”.

Gil-Garcia recognizes that “IT initiatives are outcomes of a recursive and complex relationship between information technologies and social structures (organizations, institutions and policies). As a consequence, the results of IT-related activities are highly uncertain and cannot be easily predicted” (Ibid., p. 56), which is aligned with Fountain’s uncertainty of the outcomes from enacted technology.

There are, however, certain indications that Gil-Garcia primarily subscribes to a mostly technological deterministic and rational view with hardly any room for critical investigation. First, the model is assigned a *success* model. Second, by strictly viewing the depicted model (figure 28), the reading indicates that environmental factors together with institutional and organizational factors lead to e-government success. His research is formulated as to what extent one of the three constructs has an impact on e-government success. Third, outcomes (success) are described as the taken-for-granted positive effects from e-government, i.e. efficiency, effectiveness etc. Gil-Garcia argues that due to different actors and stakeholders “it is difficult to reach consensus on evaluating the performance of IT projects and information systems.” (Ibid., p.

58). Negative effects from e-government are only briefly touched upon by indicating that outcomes can be “good or bad” (Ibid.). Fourth, people as citizens and employees are not visible in the model, as are managers. This model does not allow for the examination of negative impact from e-government and does not recognize citizens or employees as having (a right to) direct impact on e-government.

Furthermore, the enacted e-government success model can be interpreted as a steady-state model where environmental conditions, institutional arrangements and organizational structures and processes produce e-government services for citizens and effectiveness for government in a recurring and stable process. It can be doubted whether this is the state that Fountain (2001) implied in her framework, given that the empirical cases, she used as background in the book cannot easily be interpreted as steady-state processes, in fact one of the cases descriptions revealed a severe e-government breakdown.

Moreover, it is worth noticing that Gil-Garcia has “hidden” the objective technology. By defining the enacted technology in the e-government success model as “certain characteristics of the e-government initiative such as hardware, software, functionality, usability or accessibility” (Ibid.). It seems clear that the author perceives the enacted technology simply as the system that is developed in the organization. This resembles what Fountain defines as the objective technology. Fountain (2001) depicts a change process in her framework, where objective technology is transformed to enacted technology, which is different from objective technology. This change-of-technology view is lost in Gil-Garcia’s model. Why is this important? Technology determinists only perceive one technology – the objective – and believe that the technology is developed to achieve certain (performance) goals and that these are achieved after implementation in the organization. Fountain’s Technology enactment framework highlights the change in technology, enabling the researcher to discover this, while Gil-Garcia hides this very important potential impact of e-government.

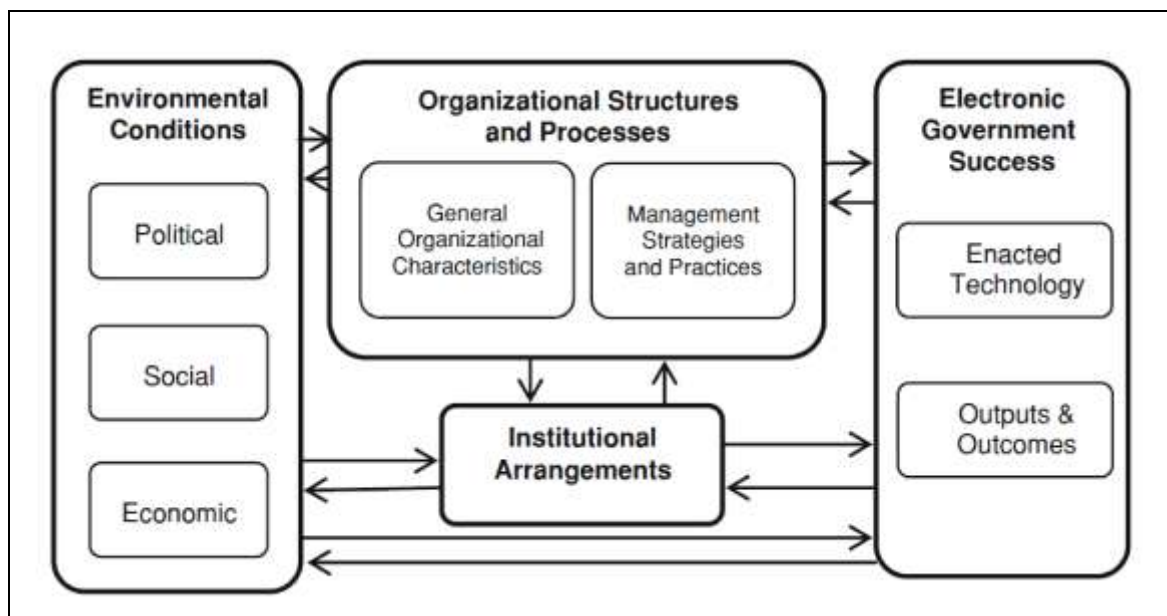


Figure 28 Enacting e-government success model (R. J. Gil-Garcia, 2012)

4.3 The Imposing E-government Harm model

Representational models such as the technology enactment framework (figure 27) and the enacting e-government success model (figure 28) are grounded in the mental models of the schol-

ars and reflect which constructs and relations, scholars find important to examine and not to examine (Rouse & Morris, 1986). In this section, I suggest a model for investigating and understanding the negative impact of e-government – the imposing e-government harm model, see figure 29. The technology enactment framework together with its assumptions constitutes the starting point. Technology is the turning point.

The premises for the model are the following:

1. Objective technologies exist and during implementation and use are shaped into enacted technology by organizational and institutional forces.

Organizational forces comprise the bureaucratic characteristics of public sector, i.e. departmentalization, hierarchies, the existence of known rules and the application of standardized operations of written documentation. Institutional forces are the laws, rules, norms and culture that by different means govern the organization (making it an institution). The believed assumptions about technological determinism, rational choice and natural selection are the explanation for the enactment of the objective technology. This is supported also by the PD view and the reason why some PD scholars insist that technology has to be designed in use.

2. Enacted technologies embedded in the given context give rise to uncertain outcomes.

Outcomes from technology use cannot be predicted and may harm people, which is one of the claims from Fountain. PD scholars highlight negative side-effects of technology that may be revealed in the situated use situation and CR scholars claim that technology may impose constraints and oppression to people. This component of impacts from technology on human beings is an essential part of the imposed harm model. Likewise, it is equally noteworthy that the successful outcomes from e-government, being efficiency, efficacy, transparency, deliberation etc. are *not* a part of the model.

3. The major concern is with people on an individual level and on a collective societal level.

The concern for the individual is shared by Fountain. Both CR and PD strive to give the weak parties a voice and fight for emancipation. Critique from the CR approach also shares the concern for the individual; moreover, the researcher has an obligation to consider the wider societal effects. In e-government that would in part be what is called the public sector ethos. CR, PD and ES are rooted in the endeavor to make the world a better place, which is also the aim of the imposing harm model.

4. The e-government institutional field has a strong impact on effects and on people, directly and indirectly through organizations, institutions and technology

Following the claim from institutional theory about the strong forces in the organizational field of the domain, the proposed imposing harm model suggests that the specific e-government institutional field plays an immense part in the creation of harm from e-government which is also supported by Fountain.

4.3.1 Dynamics of the model

To enact means to act or perform. In IS – due to the seminal contribution of Fountain – to enact has become to relate to implementation of technology, but it includes more than mere plan-driven, mechanistic and rational implementation. It also encapsulates the way the implementation is done (is acted out) and the impact of the implementation on connected social and human worlds. It may be claimed that scholars that use the notion enactment signal that there is more to technology than mere implementation and even critical aspects. To enact demands a conscious act. By choosing the notion enactment, Fountain takes the view of the ones that actively enact, i.e. those that choose technology, plan, design, implement etc. The individuals that are

affected by the enactment typically have not been actively involved – the impacts have been imposed on them by the enactment of the e-government actors, those in power (management, IT department, academic staff etc.). To underline that the imposing harm model takes the view of the individuals that passively have been exposed to harm from e-government (especially staff and citizens), this model uses the term *impose*.

To highlight that the imposing harm model reflects a recurrent state and not a project, the term is used in its verb form ‘imposing’, as Gil-Garcia uses ‘enacting’ instead of the noun form – ‘enactment’ - used by Fountain). The imposing e-government harm model, thus, supports the critical researcher in exploring the negative impacts of e-government that have been passively enforced on human beings and consequently can be interpreted as harm of e-government. The model depicts how enacted technology (originated from objective technology) together with the e-government constructs of the e-government field, the institutional arrangements and the organizational characteristic may lead to e-government harm at different levels (organization, individuals and public sector), but ultimately with human consequences

While e-government harm presumably is not planned for, the model does not primarily include the technology selection, development or implementation stages of e-government. The focus of the model is the *use* phase, where the IT project officially has been deemed finished and no further development, implementation or change management resources are available (staff, IT, economy, top management attention etc.). This is the situation, where application managers and employees are supposed to run their operations supported by the new technology. Hence, my claim is that the original PD approach (involving practitioners in design) has not proved sufficiently powerful and convincing to become standard in e-government initiatives while not focusing on operations.

The grounding of the imposing harm model on the technology enactment framework is appropriate for the same reasons argued by Gil-Garcia (p. 85), namely that the enactment framework is empirically grounded in public sector, that it is independent of choice of research paradigm (and epistemology) and that it specifically incorporates the influence from institutional forces, which is pivotal in understanding public sector activities.

Due to contextual variations, Gil-Garcia states that no generic e-government model fits all e-government instances, thus he presents a success-model as a particular instantiation. The imposing e-government harm model is another instantiation of a generic not-existent e-government model and is designed to facilitate a critical research view on e-government, thus to focus on the negative impacts from e-government on humans, which is designated the harm attributes of e-government. As an instantiation, it does not claim to be a generic model; hence it may be applicable alongside non-critical, optimistic, positivistic and technology-deterministic e-government model instantiations. It is not a competitor to, for instance, the enacted e-government success model. However, from a critical researcher stance, it may be regarded as a component in what should be a compulsory critical view on every e-government initiative before and during enactment.

Whereas Gil-Garcia finds that the technology enactment framework enables the researcher to investigate the organizational level, it does more than that. institutional theory is argued to be especial appropriate to explore different levels of the research arena (Mik-Meyer & Villardsen, 2012). While based on institutional theory, the enactment framework, enables the researcher to include views on the State level, local government level and individual level, which must be included to facilitate a thorough and in-depth understanding and critique (from CR) of the impacts of e-government.

4.3.2 Technology

In the enacting e-government success model, the technology component has been reduced to whatever technology the public organization develops within e-government. The imposing e-government harm model maintains the technology view from Fountain (2001), namely that there (once) was an objective technology that has been shaped by e-government forces to become the particular enacted technology in the particular e-government context. This view allows the researcher to primarily focus on the use of the technology, including configuration, where interoperability issues and alignment with work processes become apparent. The motivation for this view is the imbalance between the efforts provided in system development and the scarce attention to the critical issues of configuration (Bansler & Havn, 1994) and interoperability (Bannister & Connolly, 2012) or the black box of e-government as such (Yildiz, 2007). The immense focus on the IT development process, user-focus, agile methods, usability and accessibility, and access to new technologies has improved the general quality of stand-alone IT-systems. This will lure technology determinists within IS and e-government to adopt a plug-and-play attitude, leaving little or no room for the process of embedding the new system into the existing complexity of data, infrastructure, multitude of other systems, organization and work processes. To attract attention to this very complex task, it is necessary to be able to view the new technology as it looks and works after it has been enacted by the e-government forces. Only by exposing the enacted technology, it is possible to comprehend how to facilitate the required embeddedness in the existing environment and the competence gap this entails.

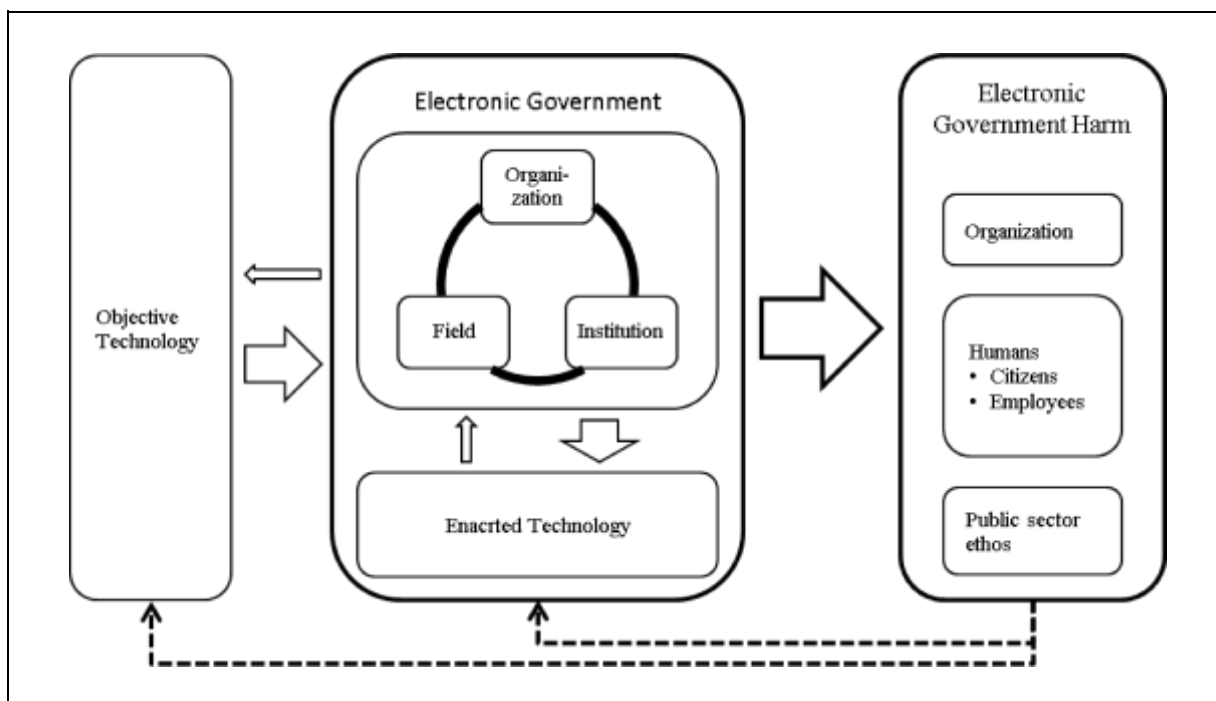


Figure 29 Imposing e-government harm model

4.3.3 E-government

E-government is what is going on between the enacted technology and the interplay with the e-government field, the organizational and institutional forces and is presumably intended to achieve positive effects. The organizational forces stem from the bureaucratic characteristics of the organization and the institutional forces comprise the laws, rules, norms and cultural beliefs.

The organizational field of e-government comprises all the organizations that work within e-government. What constitutes the field more than merely including public institutions is that they are preoccupied with digitization of the organization and the public sector as such. The field also includes the central national organizations such as State e-government units (the Digitization Agency) and bipartisan organizations (LGDK). Vendors that develop the e-government systems, vendor consultants that support implementation processes and facilitate customer groups are also a part of the field. Independent, private consultancies also play a big role with their additional resources to produce analysis and bring forward new themes and approaches. The informal and formal networks of individuals, organized from particular function (CIOs, CEOs, CFOs etc.) or expertise play a big informal part in the field. Research and educational institutions may also be included. Finally, a range of interest organizations centered on citizens' interests, vendor interests etc. may be included in the field. Politicians will in general not qualify to be included in the field due to lack of profound knowledge of what is going on – they are relegated to be bystanders but they will be heavily affected by the field.

4.3.4 E-government harm

R. J. Gil-Garcia (2012) states that due to a variety of different stakeholders in the e-government setting, it is difficult to reach a consensus about what should be seen as e-government success criteria. CR is about people; emancipation and empowerment of the weak. There is no need for consensus of harm criteria. If a group of individuals is being constrained or deprived in any way by the new e-government initiative or just some of the people within that group in some situations, this comprises e-government harm and complies with the model. In the e-government setting the weak may be the citizens. Not as an entity as such. Groups with certain disabilities or lack of capabilities might be affected by e-government initiatives, e.g. the elderly. Secondly, the floor worker in the local government may be constrained in her work due to the new e-government initiative, which might lead to an enhanced stress-level. Citizens and clerical staff have limited power platforms and empowering initiatives may be necessary to mitigate e-government harm. Bearing in mind the strong forces of the organization, the institutional arrangements and the e-government field, empowering initiatives may not be enough and even protective initiatives may be necessary. CR and PD take the view of the oppressed and attract attention to the actions of the oppressor, which is directly stated as management. This stance assumes that managers have the power to suppress employees. This may have been truer once, but with raising complexity, protection of employees, delegation of decision powers to employees, this may not be prevalent now. It may even be so that the line manager should be seen as a potential victim in the cross pressure from top management, employees and the e-government field forces. Gil-Garcia integrates the powerful role of primarily the CIO in the enacting e-government success model. The present study recognizes the power struggle between IT and application managers and the potentially unequal access to resources, which gives the CIO power over the conditions that subject matter managers must deal with (Rose et al., 2012).

4.4 Research questions analyzed by the Digital Post Imposing harm model

The imposing e-government harm model is applied in this study to the e-government initiative of DP in Danish local government. The overall RQ is broken down into sub research questions.

Overall RQ: Why is Digital Post perceived as harmful? How could this have been avoided and how is it mitigated in the future?

DP as objective technology is illustrated in figure 7, figure 8 and figure 9, p. 18 - 19. To examine the negative impacts of DP, it is necessary to examine the characteristics of the enacted DP.

RQ₁: What are the characteristics of the enacted Digital Post?

DP was launched to achieve reduction in public postal costs. Cost reduction requirements were decided in summer 2012 for the fiscal year 2013 and onwards (section 2.2.6, p. 25). If enacted DP is different from objective DP and the anticipated postal costs were derived from the objective DP then DP may affect the economy of local governments. Further, there may be barriers to DP that were not anticipated, which would hamper the positive effects from DP.

The answer of RQ₁ will reveal how enacted DP operates. DP is a communication channel between staff in the local government and the citizen. Motivation, knowledge, skills, characteristics of the technology, the content, co-actors and contextual factors determine the required competences of the directly involved parties, i.e. citizens and civil servants (Spitzberg, 2006).

Civil servants, moreover, may be affected by DP due to certain bureaucratic characteristics of the public sector and the rules, norms and culture embedded in the institution and the e-government field. Both DP as enacted technology, as well as the organizational and institutional forces together with the e-government field impacts the civil servant and the citizen.

The citizen is affected by the enacted DP and by the e-government forces. Citizens may be affected especially because the use of a computer is forced into their lives when they need to be in contact with public sector.

Institutions and institutional fields are generally stable, however in a situation, where there is a 'shock'; there may be changes to institutional arrangements. Likewise, the bureaucratic foundation is stable but may also be affected if civil servants are affected by DP. Institutional and organizational changes may contribute to long term changes in the public sector ethos. Public sector ethos will be governed by inertia, changes may only be indicative, however even indicative changes may point to severe consequences due to difficulties reversing this process.

RQ₂: What is the harm from Digital Post?

RQ₂ seeks to describe the negative impact of DP. It follows that these questions lead to explanations of why this is happening. The answers to these questions may be found in the laws, rules, norms and cultures that constitute institutions, the institutional field and the bureaucratic characteristics of the organization.

RQ₃: Why does Digital Post harm?

Critical researchers do not only provide insight and critique, but provides a transformative path forward (Howcroft & Trauth, 2005; Myers & Klein, 2011). A transformative redefinition may take its starting point in how harm from DP could have been avoided and how they can be mitigated.

RQ₄: How could harm from Digital Post have been avoided and how are they mitigated?

RESEARCH DESIGN

5.1	Empirical cases	95
5.1.1	Copenhagen Citizen Service 1 (CCS1), 2012	99
5.1.2	Copenhagen Citizen Service 2 (CCS2), 2012	100
5.1.3	Assens Citizen Service 1 (ACS1), 2013.....	101
5.1.4	Assens Citizen Service 2 (ACS2), 2013.....	101
5.1.5	Municipal adoption (MDP), 2010-2013	101
5.1.6	National government implementation (NDP), 2013-2014	101
5.1.7	The Clerical Staff Trade Union (CSTU), 2014	103
5.1.8	Assens Job Center (AJC), 2014.....	103

5 Research design

The research design follows the suggested imposing e-government harm conceptual model (figure 29). E-government harm is imposed on organizations, individuals and the public sector by e-government and enacted technology. E-government comprises the organization, the institution and the e-government field, which include central government, LGDK etc. The research is conducted as CR, seeking emancipation, revealing technology determinism and performance intent by gaining in-depth knowledge, exerting critique at individual and societal level and suggesting transformative redefinition (Cecez-Kecmanovic, 2005; Howcroft & Trauth, 2004, 2005) and further grounded in principles from PD, genuine collaboration with practitioners, allowing a voice for the weak, based on practice knowledge (Simonsen & Robertson, 2012) and engaged scholarship, disseminating research results actively to a wider societal audience for impact and change (Van de Ven, 2007).

This section describes the empirical cases and data collection.

5.1 Empirical cases

The study builds on eight empirical cases that all examine the problem using engaged scholarship, see overview in table 10 and table 11. The eight cases focus on different levels of object of study - from the individual to local government to national level, see figure 30. Chronologically, the study started with CCS1, where we extracted staff's perception of DP from a Delphi study, especially the barriers as to why they did not use DP as was intended. CCS2 was an action research aiming at introducing interventions that would increase the use of DP. The experiences from this first year were utilized in the studies of the second year.

While I collaborated with the IT department in the first municipality (CCS), I collaborated with business managers in the second municipality (ACS). Focus groups were used to gather more information about staff's perception of DP. From the Delphi study in CCS1 and the action research in CCS2, I knew, what might be the interesting issues to look for in the focus groups in ACS1, namely the overwhelming citizen concern. The first action research study (CCS2) had only to a limited degree launched interventions and subsequent change. Hence, the design of the second action research study (ACS2) deviated in critical ways from the first, for instance in the way, the researcher entered the organization and by making business managers the focal point of the collaboration. The many barriers to DP that were found in CCS and ACS fostered the idea that there might be great differences in DP adoption in the Danish municipalities, which was confirmed in the MDP study. Further, we explored the national adoption of DP by pretending as a citizen to send a digital post to all Danish public institutions, the NDP study. This study was conducted with active participation of public institutions, media, the e-government institutional field and politicians.

The ACS2 study proved that interventions and change could lead to increased effects from DP with the researcher as an active participant. In AJC, we intended to do the same - without the researcher as an active participant - to examine whether the organization had integrated the learning from ACS2. The results from this study have not yet been analysed. The observations of staff's perception of DP from AJC were even stronger than from CCS and ACS and, thus, were included in the thesis. From the first two years, my impression was that staff in the two involved municipalities found DP a bad service to some citizens in some cases. This impression was confirmed by a study of staff's perception of DP from all Danish local governments (CSTU).

The cases play different roles in the overall study and differ in applied form of engaged scholarship, hence, vary in research purpose and perspective according to the four types of engaged

scholarship, namely basic, collaborative, evaluation and intervention, see figure 31. Different types of methods of data collection and analysis were applied according to purpose and perspective. CCS2 moved from intentionally including interventions (lower, right quadrant in figure 31) to being merely collaborative with limited interventions (lower, left quadrant in figure 31), indicated by the arrow.

I have consciously chosen that this study should focus on public employees and only one of the empirical settings (NDP) allowed some - but limited - access to comments from citizens. When the ‘big day’ of mandatory DP arrived (1 November 2014), there were so many comments from citizens with rich data that supported statements from staff. Hence, additional data has been added, namely comments from citizens from three social media platforms. These data are only added to support the findings and analysis but will subsequently supplement this study as independent, future research.

During the entire PhD study, the investigations and results were recurrently presented for discussion to practitioners at different levels and from different institutions, including 3 meetings with 50+ CIOs from local governments at KMD, 3 DP network meetings at the Digitization Agency with 50+ project managers from different institutions, 18 workshops with 10 participants from local government at KMD, 2 network meetings with 10+ participants, CIOs from private and public companies at Danish IT (private organization), a presentation at the Digitization Convention 2014 with 200+ participants, a presentation at local governments’ citizen service center managers summer meeting, 2014 (150+ participants).

Table 10 Overview of empirical cases (1-4)

Case	1 CCS1	2 CCS2	3 ACS1	4 ACS2
Setting	Copenhagen Citizen Registry team (CCS), 34 employees, 2 months	Copenhagen Citizen Service (CCS), four teams (two departments) with 80+ employees, 12 months (one day a week in average)	Assens Citizen Service (ACS), 14 selected female employees with variance in DP readiness and attitude, and work tasks	Assens Citizen Service (ACS), one department with 40+ employees, 14 months (one whole week living in Assens + two days once a month
Research purpose	Explore and describe staff’s perception of DP Apply and test method for e-government effect realization	Generate knowledge about e-government effect realization	Explore and describe staff’s perception of DP	Test method for e-government effect realization, explore enactment of DP
Practice purpose	Evaluation of perceived barriers and drivers to DP, specification and prioritizing of efforts to increase use of DP	Reduce postal costs, develop e-government effect realization model	Settling of the researcher in the organization. Initial organizational change management as preparation for the following intervention	Reduce postal costs, elaborate on a generic e-government effect realization model
Research perspective	Detached	Attached	Detached	Attached
Engaged scholarship	Evaluation	Intervention	Basic	Intervention
Method, data collection	A Delphi-study with 34 participants was conducted. Concepts and categories of barriers and drivers to DP use was elaborated in a hierarchy and prioritized by participants	Action Research including various qualitative and quantitative data collection (project group meetings, staff group interviews, workshops, evaluation, gathering and analysis of DP transaction data, staff surveys, citizen surveys, elaboration of specifications of effects and governance)	2 focus groups, see paper 5	Action research including meetings with managers and staff, gathering DP transaction data, elaborate and disseminate effects measurements, establish governance, surveys of staff, see paper 4

Table 11 Overview of empirical cases (5-8)

Case	5 MDP	6 NDP	7 CSTU	8 AJS
Setting	Municipal Digital Post (MDP), adoption patterns of 98 municipalities through 3 years	National Digital Post (NDP), 243 public institutions (98 municipalities, 5 counties, 18 state departments and 122 state agencies)	Clerical Staff Trade Union (CSTU), covers 72% of the local government employees, 450 respondents	Assens Job Center (AJC), one division, 120+ employees, one head of division, five managers, 5 months, one day every two weeks
Research purpose	Longitudinal, exploratory study to find adoption patterns and evaluate according to anticipated adoption	To explore and describe the national and local enactment of DP, to disseminate results and create a public discussion about the enactment, to create knowledge about e-government enactment	To describe and confirm that staff has a mixed perception of DP and that various barriers exist. Explore how staff perceive the changes of citizen service due to the enactment of DP and the UTAUT adoption factors	Explore, describe and explain how e-government effect realization is enacted in a local government institution and the significance of management
Practice purpose	Evaluation of the business case from Ministry of Finance	Enhance staff and citizen awareness of barriers, challenges and consequences of DP	Input to policy strategies	Generate knowledge about how DP is enacted in a local government institution regarding the role of managers and reduce postal costs
Research perspective	Detached	Detached	Detached	Attached
Engaged scholarship	Evaluation	Evaluation	Basic	Collaborative
Method, data collection	Statistical clustering analysis of transaction data, analysis of postal costs, evaluation of DP business case, see paper 2	Investigation of public institutions' digital responsiveness by sending digital post, observations on DP enactment, survey on reasons for not answering and observations while in dialogue with 76 public institutions, active communication through media about results	Survey, see paper 6	Observations of staff, interviews with project managers, management and CIO

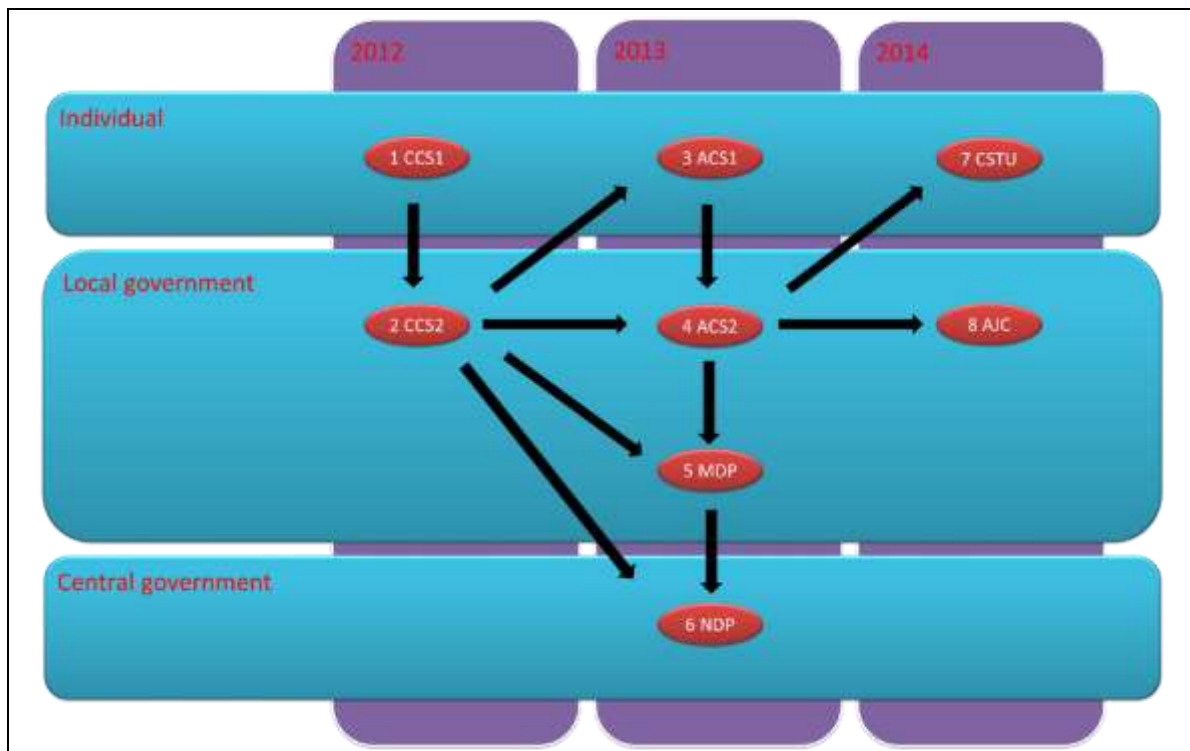


Figure 30 Empirical cases according to unit of analysis and time

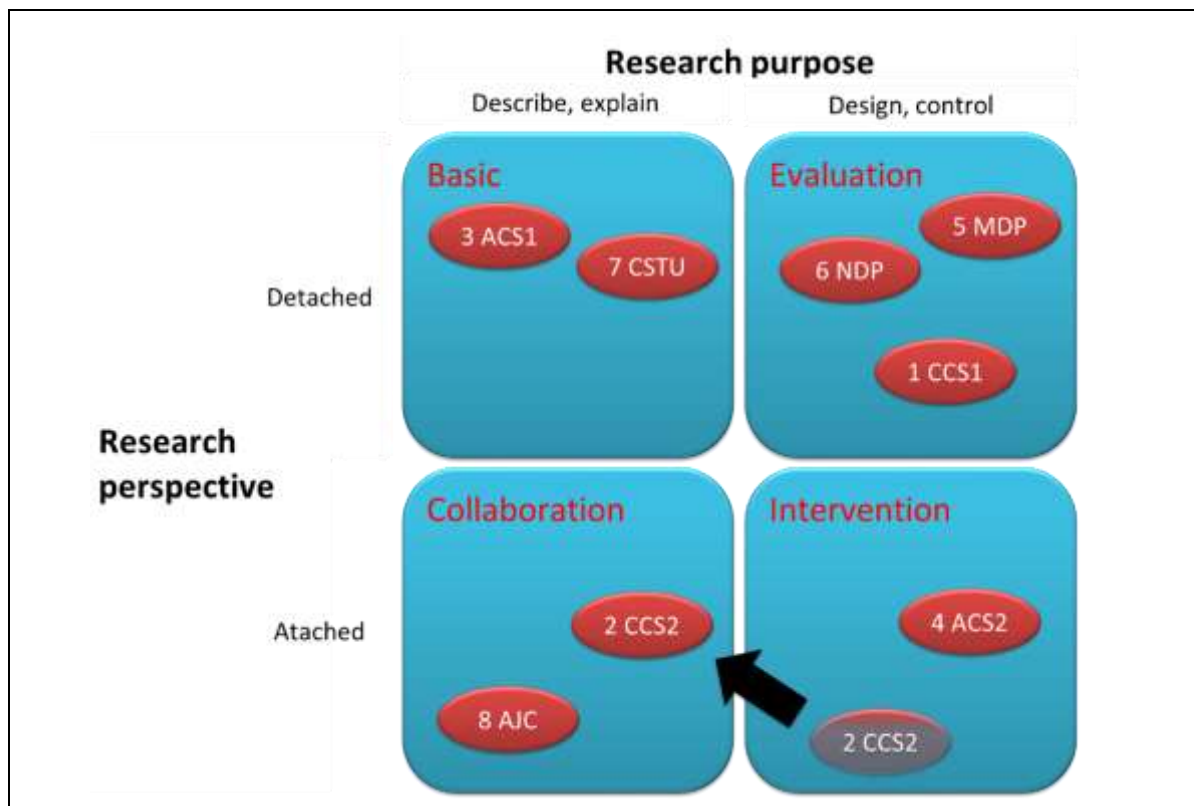


Figure 31 Empirical cases according to form of engaged scholarship (Van de Ven, 2007)

5.1.1 Copenhagen Citizen Service 1 (CCS1), 2012

The overall goal for the research collaboration was to increase the use of DP⁴ in CCS. This first part of the study was conducted to explore the reasons for not using DP in CCS and to subsequently impose change by interventions that would improve the use. The study aimed to extract detailed information from the ‘experts’ of how to handle DP, namely staff that performed the daily DP operations. Operational staff used DP or not, after their own criteria, which were hidden from managers. The information could be characterized as sensitive because staff omitted DP against the decision of management. Further, it was the purpose to generate prioritized lists of barriers to and drivers for DP since the most prevalent barriers and drivers would be addressed in the further steps of the following study.

A Delphi approach was selected as an appropriate approach (Okoli & Pawlowski, 2004). Managers and the researcher had only vague ideas of the reasons for staff not using DP. This approach is appropriate in a complex setting where a group of experts in an iterative manner participate in a virtual group discussion, where the participants are anonymous and where individuals cannot dominate. The Delphi approach may follow the process of brainstorming, narrowing down and ranking. Further, this technique has little bias from the researcher as the researcher doesn’t engage with participants and only play an administrative part. Further, improvement of reliability and validity (compared to surveys) are ‘built-in’ the method due to the iterations. Delphi studies tend to generate richer data (than a survey) because of the iterations.

The researcher was invited for a department meeting to present the study. At this meeting, the researcher got feedback on initial responses to barriers and drivers for DP. These statements were synthesized and worked as the initial input to the five questions that were posed. Each question had a positive and a negative version, see figure 32.



Question		
Digital post	What can increase the use of doc2mail?	What prevents more use of doc2mail?
Caseworker	What makes it easy for the caseworker to use doc2mail?	What makes it difficult for the caseworker to use doc2mail?
Citizen	What makes it a good experience for the citizen to receive digital post?	What makes citizens experience digital post a poor service?
Reply	What should we do with reply to increase the use of doc2mail, to increase service for the citizen or to make it easier for the caseworker?	What can make that new response in digital post may prevent increased use of doc2mail, do service for the citizen worsen or make it more difficult for the caseworker?
Ownership	What can give us more ownership of the communication with citizens that we are part of?	What can make us care less about communication with the citizen?

Figure 32 Questions to be answered in the Delphi study (CCS1)

⁴ Actually, it was use of the output manager, doc2mail. Staff does not use DP directly

34 participants were selected by their use of DP and amount of letters handled. The aim was to include all due to not leaving anyone outside the exercise as it was the first step in a year-long change process.

The Delphi study was performed with participants of 7-9 in 4 groups and conducted in silence. In each group, every person answered the first two questions (the negative and positive version of the first question) on the left and right side of an A3 paper and after a certain time, the paper was handed to the person at the left. The task was to read what had been written on the sheet and put a mark if agree, and further add a new answer to the same question. After one whole round, this question was considered as done. One round was conducted for each of the five questions.

It was pointed out at the introduction that the focus was on issues that could be affected by the team.

A number of questions from the researcher to clarify statements were clarified by the manager in dialogue with staff prior to the analysis. The results were found from the prioritizations by the number of marks. The results were presented at a department meeting.

5.1.2 Copenhagen Citizen Service 2 (CCS2), 2012

The municipality of Copenhagen implemented DP late 2010. There were implications that e-communication generally was not used. A collaboration between the researcher and the Citizen Service department of the municipality of Copenhagen (CCS) was established late 2011. The research was conducted as Action Research (AR), solving a problem in the real world while generating scholarly knowledge. AR is an appropriate methodology to investigate technology in organizations (R. Baskerville & Wood-Harper, 1998). The scope of the collaboration was to help CCS cut postal costs by increasing DP use and to further expand on the understanding realizing from DP as an e-government initiative.

The CIO of CCS and the researcher made a formal agreement about the AR study. CCS should pay DKK 100.000 to have the researcher as a resource one day every week in 2012. Two departments were selected as pilot departments, each department consisting of two teams. Altogether the pilot departments engaged 80+ employees. These four teams work within a range of different public sector services (health card, passport, registration of addresses, citizen's debt, housing tax, funeral cost aid, welfare payments fraud) and had an estimate of 2-3000 letters a month. The project period was one year, 2012.

The project manager was a former office worker from one of the teams that had advanced from operational staff to IT project manager in the IT department; this project was her first as an IT project manager. She was 30 years old and had only little project management experience and education. The project manager announced her maternity after two months and left for maternity leave from June. A new project manager was appointed in April but his contract expired in July. His contract was postponed one month and then from August one year. An experienced DP consultant from the supplier was supposed to follow the project with responsibility for the overall quality of the project hence being the "disassociated watcher" (R Baskerville & Wood-Harper, 1996) that could serve as to validate data due to the interpretive nature of data and the impartiality of the researcher. The agreement of the AR study was further confirmed by a project initiation document as covering the elements of the Client-Researcher-Agreement (Davison et al., 2004).

Various research activities were enabled the thorough observations of individuals and the organization, see activities in table 10.

5.1.3 Assens Citizen Service 1 (ACS1), 2013

Two focus groups were conducted to explore staff's perception of DP, see methodology in paper 5.

5.1.4 Assens Citizen Service 2 (ACS2), 2013

A collaboration agreement with the municipality of Assens (41.000 citizens) was made; with the aim of enhancing value from DP in the Citizen Service Centre department (ACS), i.e. facilitating the adoption process. ACS implemented digital post in 2010. After two years they had a suspicion that DP was not used by staff and they had not seen any drop in postal costs. In 2013, the municipality had DKK 0.8 million cut from state funding due to expected reduction in postal costs from DP. ACS has two managers, and the department of 40+ employees is divided into 8 teams. The teams work within a range of different public sector administrative services, such as issuing health card, passport and driver's license, registration of addresses, handling of citizen's debt, funeral cost aid, welfare payments fraud, welfare payment and retirement aid. The project period was March to December 2013. The project aim was to increase use of DP. It was also the aim to formulate a generic implementation model that should be applied by all departments vis-a-vis DP implementation. The study was carried out as Action Research with the researcher in collaboration with head of department and the two managers, actively introducing interventions to the work field. The methodology and various methods applied and the AR phases are described in paper 4.

5.1.5 Municipal adoption (MDP), 2010-2013

The aim of this study was to triangulate the results from CCS and ACS, to get the overall assessment of DP adoption in Danish municipalities.

The adoption of DP throughout three years was analyzed using the number of output manager transactions from the 98 Danish municipalities. Furthermore, the number of output transactions was used to evaluate the national business case. A more in-depth analysis of four different municipalities was performed from consultancy reports on estimated postal cost reduction potential. The results of the study were presented at a workshop with around 100 participating managers of local governments' Citizen Service Centers, followed by group work on DP adoption barriers. Results were also presented at the Digitization Agency DP network meeting for discussion of DP adoption barriers. The methodology is described in detail in paper 2.

5.1.6 National government implementation (NDP), 2013-2014

We followed the responsiveness study approach from K. N. Andersen et al. (2011). We sent a digital post to 243 public institutions (98 local governments, 5 counties, 18 State departments and 122 agencies), asking for the physical address and the opening hours. The study was an experiment to pursue the call from Van de Ven (2007) to engage with the wider society to stimulate reflexivity and change. Thus, the study is reported initially in Danish (Berger & Andersen, 2013a, 2013b, 2013c). Alongside the working papers, we published press releases (Berger & Andersen, 2013d, 2013e, 2013f, 2013g; Berger & Andersen, 2014) in a straight forward tone, and gave various interviews to stimulate public debate. Appendix A includes the major media events.

We received an answer from one-third of the public institutions (80), see distributed results in table 12. We registered the response time and quality (to what extent, they answered the questions). We further registered attributes of DP configuration for each public institution. We sent an e-mail a week later with the same questions to compare the responsiveness from the two channels; the e-mail responsiveness was 70%.

Table 12 Response rate, NDP study

Number	Municipalities	Counties	State departments	Agencies	Total
Digital post sent (N)	98	5	18	122	243
Answered digital post	52	5	0	23	80
Did not answer digital post	46	0	18	99	163
Completed survey	25	0	6	45	76
Did not complete survey	21	0	12	54	87

We presenting the ‘results’ regarding DP in an e-mail to all public institutions⁵, i.e. their response time and quality, and asked them to participate in a survey about their assessment of their own performance and the causes for not answering if they had not answered, see survey in figure 33.

Scale of agree, slightly agree, neither/nor, slightly disagree, disagree:
1 As a public institution, we are satisfied with our response time?
2 As a public institution, we are satisfied with our response quality?
Missing answer is primarily due to:
3.1 technical configuration of digital post?
3.2 organization of work processes regarding digital post?
3.3 human errors treating digital post?
4 Level and function of respondent?
5 Contact information

Figure 33 Survey regarding reasons for not answering DP

In the first week, we were contacted by 41 public institutions by phone or e-mail, the immediate reaction was that they did not understand the letter because of uncertainty of what DP was. During the next six weeks, we were in contact with 73 public institutions to help them understand DP and assist them in finding out, if they had answered, and how they should investigate reasons, if they had not answered. We primarily had contact with public institutions that had not answered our DP, thus we had an impact on their understanding of DP, thus on the content of the survey, which may have invalidated answers to question 3 of the survey.

The survey was answered primarily by managers or IT/academic staff outside the operational site, whereas observations stem from dialogue with operational staff. Thus, the study builds on two primary qualitative data sources: Survey data, where public institutions state their formal perception of their performance and explanations on causes to failure of answering DP and observations from our dialogue with public institutions.

This process occurred from June 2013 and onwards – as of February 2015, we still get requests from public institutions, citizens and media. The primary process constituted four main sub processes, generally following the same pattern, namely (1) authors conducted research, (2) authors disseminated results using provoking statements, (3) media processed our results, (4) actors reacted, and (5) actors acted. Reaction and action was performed by politicians, public institutions, software vendors and/or the public. See timeline and major activities in Figure 34.

⁵ We send a physical letter to those that had neither answered the digital post nor the e-mail

	Part 1 June 2013	Part 2 September 2013	Part 3 November 2013	Part 4 February 2014
Study	Municipalities, counties and State departments	State agencies	Causes for not answering DP	Evaluation of BC
Publish	Ministries don't answer DP	State shambles on the web	PIs don't know what DP is: Massive technical problems	DKK 100 million gone with the mail
Media	Digital silence in public sector	DP is chaos: You won't get answer if you send DP	DP: What is that? 36 PIs not on DP. PIs can change your In-Box	More than 100 million lost changing to DP
Reaction	MP requires comments from MF. DDA: This is not acceptable, cannot by technical error	MP to MF: Is it satisfactory that only 20% agencies answer DP? MF apologizes: No, it is not okay	MP: Is it aligned with e-gov strategy that not all PIs use DP? MF: No, but not all PIs have to use DP MP to	DDA: Yes, the BC has not been realized. LGDK: We haven't a clue and we will not evaluate
Action	MF: All PIs must answer within 2-3 days	MF: DDA will intensify and follow-up on all PIs and ensure they can receive and answer Digital Post	MF: DDA will assist PIs implementing DP. DDA will publish list of PIs that have to answer. Ombudsman examines In-Box issue	DDA invited the authors to present and discuss results

PI: Public institutions, MF: Minister of Finance, MP: Member of Parliament, DDA: Digitization Agency

Figure 34 Timeline for interactive process, June 2013 onwards

5.1.7 The Clerical Staff Trade Union (CSTU), 2014

We sent a survey to 16,800 members of the Clerical Staff Trade Union (CSTU), asking whether they perceived digital post as a 1) better service, 2) poorer service or 3) so unacceptable poor that they did not use DP. Further, we asked questions related to the four UTAUT constructs and three moderators. From the 16,800 members, 2,174 opened the survey and 622 completed the survey, see description of study in paper 6.

5.1.8 Assens Job Center (AJC), 2014

An agreement was made between the researcher and the CIO that the effects driven digitization model, which was applied in ACS should be applied in AJC. To be able to develop a self-sustained digitization model, it was agreed that the researcher, as an external person, should not have an active role; this role should be taken by an internal resource. The exact same elements, which were applied in ACS2 should be applied in AJC. AJC has 120+ employees in 8 teams with four managers and a head of department. Roughly speaking, each team has the responsibility of one particular segment of citizens. Their aim is to get the unemployed citizens away from welfare benefits. The segments of citizens span from healthy citizens with no other problems than unemployment to citizens with psychiatric problems and/or different forms of dependencies (drugs, alcohol etc.). The vast administrative tasks are handled with the job center administrative system (Workbase), but additional tasks involve ad-hoc communication with citizens and businesses. An academic staff employee was appointed to take the role of the effects consultant (DP project manager). I was given a desk at AJC and spent between a half and a whole working day every second week from February to June with the DP project manager. The project manager spent time consulting the teams (both case handlers and managers) about

DP. The setting constituted a suitable frame for conducting observations of the perception of DP amongst staff and managers in various contexts.

A second part of this study followed the dialogical action research approach (Mårtensson & Lee, 2004), performed as a series of one-to-one dialogue meetings between the researcher and the practitioner. The aim was to create change from the researcher inducing theoretical

knowledge to remedy a particular challenge for the practitioner, the practitioner applied the knowledge (or not) in the practitioner's world to the real problem and the effect was evaluated at the following meeting by reflective dialogue, which aims at specifying learning. A new challenge was addressed by a (new) theoretical approach. Together with the head of ACS department (and also local government CIO), I conducted ten meetings from January to June of one hour duration and recorded the dialogue.

Both parts of the study generated multiple observations about the DP implementation process.

FINDINGS

6.1	Impact on citizens	107
6.1.1	Technology too complex	107
6.1.2	Loss of sharability	109
6.1.3	Citizens with less resources or motivation	111
6.1.4	Loss of money, loss of rights.....	112
6.1.5	No total communication flow control.....	113
6.1.6	Communication barriers	114
6.2	Impact on civil servants	115
6.2.1	Work situation	116
6.2.2	Technology	117
6.2.3	Lack of interoperability with feeding systems	118
6.3	Impact on organizations	119
6.3.1	Economic consequences	119
6.3.2	Legal issues	126
6.3.3	Other barriers.....	128
6.4	Impact on public sector ethos	131
6.4.1	The Constitution and public interest.....	131
6.4.2	Circumvention of DP.....	132
6.4.3	Exemption	133
6.5	Organizational and institutional forces	136
6.5.1	Joint-up government.....	136
6.5.2	Political level.....	137
6.5.3	Administrative level	140
6.5.4	Imbalance	146
6.6	Implementation strategy.....	147
6.7	Enacted Digital Post.....	150

6 Findings

6.1 Impact on citizens

DP can entail enhanced flexibility, timeliness, accessibility for some people and lead to quicker and easier contact with public sector. However, DP may also impose harm to some citizens of various types and in some situations. From NDP, half of respondents describe incidents, where they perceived DP as a reduced service to citizens. Harm to citizens from DP is clearly related to technological complexities combined with lack of capabilities and motivation, which can have severe consequences where citizens are dependent on the public sector for benefits or services. See paper 5 and paper 6.

6.1.1 Technology too complex

Staff report that some citizens find DP complex to setup and to operate. One confusing element is the similarity between e-Boks and DP (see figure 7, p. 18 and figure 10, p. 20); citizens do not know the difference between the two systems; when to use e-Boks and when to use DP, let alone the crucial necessity to synchronize the two systems to allow the same access to messages from both interfaces, see sections 2.2.2 and 2.2.3 for further details. When the hot-line support for e-government was extended to cover outside-office hours in the Mid-Jutland county area, the number of calls from citizens ten-doubled and it was mainly due to questions about Digital Post and EasyID. The confusion about DP and e-Boks was one of major issues (Sandal, 2014b). Citizens' operation and maintenance of EasyID has immense attention by staff, which includes activation of EasyID, re-activation when citizens have not been able to follow activation procedures, login (password and access codes), the recurrent updating of Java.

My own in-laws call me up when something pops up on the screen that they do not understand and ask 'is someone hacking us?' And it's just because it [Java] needs to be updated" and "it's also because there are many English words – to the rest of us, it may be logical – but it's not so for those who have never learned any languages (staff).

Many citizens, come to the Citizen Service Centre to register for EasyID and staff subsequently discovers that they already have an activated EasyID, which reveals that some citizens are unable to cope with the digitization process. Perceived complexity also relates to uses of the computer, e.g. file handling and managing attachments to DP. Further complexity originates from citizens having to print or scan and e-mail back due to the DP reply functionality not being installed by the public institution and lack of forms that can be signed digitally. Hence, connecting, maintaining and operating of both printer and scanner entail complexity. Citizens have problems setting the alert functionalities of DP. Further perceived complexities are operating and updating of the browser and establishment and maintenance of Internet connection, even operation of mouse, keyboard and touch screen is a perceived difficult according to staff. I observed an elderly citizen at the library. He came with his home assistant and had forgotten his reading glasses. The assistant was not allowed to help operating the computer (due to CPR as sensitive information). The elderly man spent ten minutes just logging in with EasyID, not able to operate the keyboard or orientate on the display.

Many citizens have commented the lack of forwarding functionality.

Free us for a poor and enforced postal system!

Scary, that you cannot configure the system to forward the mail to our private messages! We have not asked to have secured postal service, and free citizens in a free country will not be forced, and certainly not for this junk!

(...)

We are some who do not see IT ghosts everywhere and not have problems using our personal identity in our mail! Who on earth bother hack into citizen's mail?

If we continue to be forced to using this bad system, may we at least be free to choose to have the message sent to our email addresses. Who is it in the end that decides about our personal identity? The State or ourselves..? (Trustpilot, Mich, 11. November 2014)

From 2010 until July 2014, EasyID was based on Java, which entails that the citizen has to recurrently update Java. The process of updating Java update involves download of files to the computer and removal of files on the computer. The process is displayed only in English and held in IT-terms ('runtime', 'applet', '32 bit', 'virtual machine'). The welcoming text in the update process includes phrases like: "[T]he world of amazing Java content", "From business solutions to helpful utilities and environment" and "Java makes your Internet experience come to life", which for some people might resemble text from a commercial site that may be deemed untrustworthy and is far from public sector rhetoric. During this process, the citizen needs to accept that the computer is mingled with – contrary to common security rhetoric. If the user chooses to run the Java without installing, the text from the browser will assume a run of an application that may harm the computer. See the displayed message from Chrome in figure 35. The user is told that running Java "may put your computer and personal information at risk". The banking sector, which also offers access to net banking via EasyID, has pronounced that they have spent immense resources assisting customers with Java updates. Java does not run properly on Mac, which means that electronic forms from Digital Post cannot be signed using Mac. (Trustpilot, Thomas, 1. November 2014). Comments also reveal problems using Digital Post from Firefox (Trustpilot, Morten, 2. October 2014). A service message on Citizen.dk 18. November 2014 read that "[t]here are currently problems with accessing Digital Post if you are using Internet Explorer 8. Try any other browser such as Chrome or upgrade your current Internet Explorer to a newer version."

decided to end support of Windows XP from April 2014 and from 15. July 2014, EasyID will not be able to run on Windows XP. The Digitization Agency estimated that this would concern 270.000 citizens. EasyID was updated July 2014 to operate without Java, but the Digitization Agency recommend that citizens upgrade their OS (Sandal, 2014a).

Digital Post transforms every text to PDF, which may be read by the free Adobe Acrobat Reader. The Acrobat Reader also needs to be updated. Updating Acrobat Reader might cause the user to unintentionally also download and install McAfee antivirus software because this is the default option, like updating Java may cause an unintentional installation of the Ask search engine. To be able to operate Digital Post, these tools are absolutely unnecessary and removal of the tools may be tricky. The 'automatically' installed Ask search engine has caused harmful reactions by citizens in the media.

The Google Chrome browser uses its own PDF reader by default. Digital Post has been developed to Acrobat Reader. It is possible to view a PDF file from Digital Post in the Chrome PDF reader, but it does not allow all the functionality, for instance support hyperlinks. Chrome can be configured to view PDFs using Acrobat Reader instead.

It has advantages and disadvantages to rely on 3rd party components, however, to maintain the various components require certain not trivial IT skills.

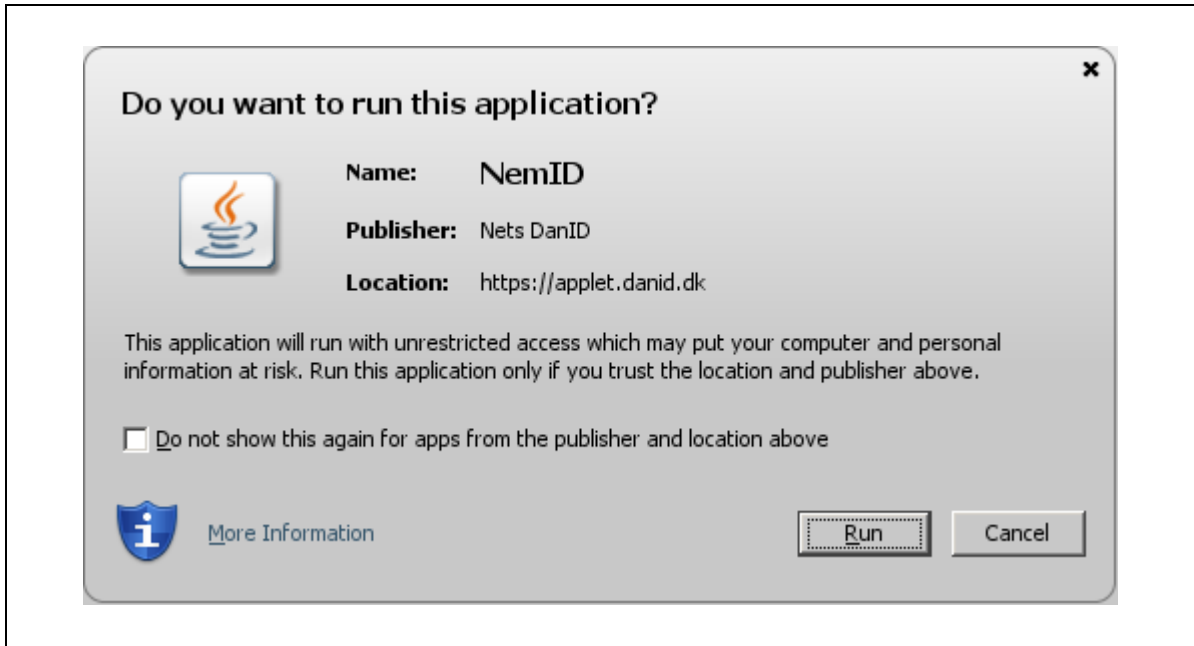


Figure 35 Java update message

A 76-year old lady tells in the monthly newsletter for the elderly about how she is afraid of using DP: “I get very annoyed with myself and I know that I just have to pull myself together. It has to do with my sight. I need to take off my glasses to see the small numbers of the access code chart [figure 3], hold the chart close to my eyes, and close one of my eyes and even than; sometimes I cannot see it. I know that even though I try, I might fail and then I get insecure and anxious and don’t want to.”. Her husband manages the EasyID login for her. “I know that it is against the law. I have always been a law abiding citizen, but when it is like this, then, I don’t care”. When she got the computer she didn’t turn it on for three months: “I thought that if I did something wrong, the police would be here. My mind told me that it was rubbish, but I was afraid that I would ruin something on the Internet and do something illegal”, and she concludes “I hate this digitization and I regret that I got e-Boks, because, now, I sit here, and if I want to see if there is mail for me, I need to ask my husband or son. I feel decoupled from society when I cannot login myself, I cannot even change my GP.” (S. K. Hansen, 2014).

To access DP, the citizen has only the option of using EasyID. Activation of the EasyID has been troublesome for citizens as well as reading of access code charts, ordering new charts etc. During October 2013, EasyID was down for four days, i.e. citizens could not access the digital post. The Digitization Agency stated that this was the security level that had chosen with no further argumentation of the sensitivity of only one access channel. The Tax authorities have two access channels, both the EasyID and a pin code that the citizens choose themselves (Fribo, 2013c). This is commented by a reader.

With something as paramount as a common login solution for (almost) all public services, internet banking, etc., there should be at least two completely independent login methods that can be used anywhere, such that one can use one if the other is inaccessible (or if you lack confidence in it).

The two solutions should be provided by two completely independent organizations with no common code base and hosted on different hardware. If they each have downtime under 1%, then the time when both are down (due to the independence assumption) be under 0.01%. (Comment from citizen, Ibid.)

6.1.2 Loss of sharability

Privacy and security matters have an impact on the use of DP. A physical letter can be shared by the recipient by simply showing the letter to someone or allowing another person to read the letter together with you. The materiality of the physical letter, hence, affords sharability, both

physically and cognitively. What if the letter is personal and contains sensitive information? The letter is owned by the recipient and it is commonly acknowledged that the recipient may do with the letter, what he pleases. He decides the confidentiality of the letter. It is his responsibility and his right to share the letter and its contents or to give it to somebody else or not. He cannot violate any rule or law just because they receive a letter. Likewise, it is culturally regulated how we treat other people's physical mail. The secrecy of a letter is notorious - it is morally wrong to read another person's letters. However, if the other person asks you to read the letter in order to assist him in a matter, it is likewise considered polite to attempt to help and in this situation, it is perfectly legitimate – actually a prerequisite – to read the other's letter. Hence, confidentiality is decided by the involved persons not to be an issue. The shared action is only negotiated by the two implicated persons. Within families, it may be absolutely normal and considered a part of the division of duties that one parent handles the administrative family business, which may include filing tax (for both persons), paying shared bills (regardless of who's name is on the bill), claiming vacation payments (for both persons), registering children for daycare or school, applying for welfare benefits (for all the people in the family) etc. It would also be considered perfectly normal that adults help their elderly relatives with their paperwork. Becoming elderly, it may be difficult to understand complex public forms. Likewise, it would be expected that the parents assist the teenager with new stuff as tax, enrolment in high school, application for student loans, application for rent subsidies etc. One participant notes that “there are really many young people that know absolutely nothing about tax and they don't dare [do] anything [in the system]”. One participant in a focus group states that “we suddenly hear from relatives [to an elderly on a nursing home] that have been tidying the room and they have found some [unopened] letters, I wonder if, when this becomes digital, it will be difficult to discover these things”.

As an outcome of the Weberian bureaucracy, the administration of the public sector is based on written files, which combined with a very pervasive and controlling Danish welfare system results in an enormous amount of written forms that must be filled out by the citizen; interaction with public sector entails some kind of written information and consent or at least a written signature, which adds a seriousness to the content.

So, how does this translate to the DP context? The citizen must not reveal the password to EasyID or share his access codes. Furthermore, the username is the CPR, which is defined to be confidential information by the Danish Data Protection Law. This has no direct influence on the process, but there exists a shared cultural belief that the CPR is secret and that dreadful things may happen if other persons get access to your CPR. What, in the analogue world was a case of consent between two persons about access to content of a letter, access to the DP is now a matter of confidentiality regardless of the content of the letter but solely due to the means of access to the content, namely the userID being CPR and confidential, and the EasyID password and access codes. This has created a situation at the Citizen Service Center where the citizen must operate the computer independently with no help from staff and the public servant must stay physically distant from the computer (in order to avoid access to sensitive data), which changes the sharability of the message considerably.

Several parts of the study reveal proof of how DP changes situations, where citizens share information. School dentist administrative staff report how children do not show up because they did not see the appointment in their DP. Before, the letter was in the school bag for the parents to see. Another clerk reports of a letter that was sent to the foster child in her DP that the foster parents did not have access to. Staff report of relatives to that were able to pick up and sort out the physical mail when they visited at the nursing home but are no longer able to see the mail now that it is digital. As one employee notes, “you can't just share the letter in the same way as if it was just lying on the kitchen table” or as another replies, “if you are hospitalized, you can-

not ask your neighbor to empty the mailbox and you don't just give him the code to your digital postbox?''.

A participant notes that before, they occasionally helped citizens filling out forms or did it for them, also because, sometimes, it is not the entire form that must be filled out or the form no longer reflects reality and filling out the form requires further explications from staff. Such shared action is difficult in DP. Staff complain that the forms are not at all ready for rigid digital filing in personal isolation and that this leads to citizen frustration and errors. The participants during various activities in this study - expressed frustrations because – as they perceive it – they are not allowed to help citizens any more. As one participant notes about why she feels frustrated “to say to people that you MUST use the e-services, ‘but I cannot figure it out, can’t you help me?’ No, I cannot! I have been brought up with the stance that we help all we can. Today, we’re not allowed to do that” (staff, ASC). This feeling is immense and it impacts the work life quality negatively because helping the citizens is “what makes you get up every morning and go to work”, and joking about it, one employee points out that “in the future, we will not be Citizen Service Center but only Citizen Center”.

Further indications that this is a serious design challenge and that the very strict authentication paradigm does not fit into peoples’ real life is that a privately developed app has been launched for iPhone that can photograph the access codes chart and protect it with password. The initiative has been deemed illegal by the Digitization Agency. Another indication is that access code charts are handed to other people. In one of the case settings, the majority of employees carried the chart of their spouses in their purse.

Danish Administration law stipulates the citizens’ right to be represented by another. Fenger (2013) claims that the de facto difficulty of sharing DP documents is a violation of this right. Staff report that DP is not appropriate when documents need to be shared in a workflow between more actors, e.g. the citizen, the GP and the hospital or citizen and provider of assistive equipment.

6.1.3 Citizens with less resources or motivation

There may be many reasons for citizens not to be able to communicate by digital post, namely if citizens lack the necessary IT skills, if they lack a computer, printer or Internet access etc., if they are not motivated and if they may be described as weak. A coexistence of these causes is prevalent.

Vulnerable citizens are described as elderly, homeless, drug addicts, psychiatrically sick, blind, dyslectic, migrants (poor Danish competences), economic poor etc. There are many statements from case handlers regarding services that involve vulnerable citizens, where staff refrain from using DP out of concern for the citizen.

Citizens that do not possess a computer and cannot afford to buy computer, printer and monthly Internet access have great attention from staff. “I have had some elderly citizens on the phone, who are weeping because they do not have computer. They ask if they can apply for financial aid”. “We have many citizens that are not used to working with computers, they don’t understand it and cannot figure it out, (...), I feel sorry for these citizens that are forced to do all this if they are over 80 and never have used a computer”. “We have many citizens in nursing homes, maybe they have a computer and are able to play a game but you cannot expect that they can operate [DP]”. Staff also worry about access for the sick that are hospitalized, how can they get access to computers and elderly citizens that have no relatives to help with the computer. Staff are also aware that the ability to manage DP depends on the life situation; that in a crisis of unemployment, divorce, sickness etc., the citizen may not be able to overcome all

the things necessary in the digital media and to understand what documents should be acted upon and what not. The loss of sharability affects this situation further.

Lack of computer capabilities is frequently reported particularly among the elderly. However, also the very young are reported failing to arrive at their first day of school or work because they have not seen DP.

Lack of motivation is a very prominent reason for the failure of DP. Staff report that citizens forget to look into their DP, that they have not setup the text or e-mail alerts (or have failed to confirm phone number or e-mail address), but also, that citizens simply have forgotten that they have registered in DP – or as staff mention - that another person had had them registered (a case handler or a relative).

Staff are aware that for the vulnerable citizens, the mandated use of DP may make their situation worse, thus for “the dysfunctional it is a bad solution (addicts, very socially disadvantaged, homeless, mentally ill, etc.). Many of these fail to communicate in this way – they are unable to take responsibility about digital actions, do not have computer or no Internet access, they are not aware of the arrival of digital posts and, generally, have an unstable life. Often, it ends in a situation where the citizen must be sanctioned for failure to answer or doing a ‘no show’ - and it does of course only make the overall situation worse” (staff). These statements find support from citizens.

Introducing this coercive e-government, one might wonder, whether citizens that have a lot of contact with public sector have been asked of their opinion, the chronical sick, the addicts and other clients, whom might operate Facebook, but to logon with this – I must admit – annoying and complex EasyID, just to see if there is a message from their case handler, constitutes an unpleasant and unmanageable effort, which will be postponed with severe consequences. With this new ‘stunning’ tool, the State has invented the reversed burden of proof. With DP, it is no longer possible for relatives to keep up with and ensure important meetings and appointments are held (citizen).

6.1.4 Loss of money, loss of rights

Jimmy, a 40-year old benefits recipient and single parent called Payment Denmark to ask for his child support benefits that had not entered his bank account. He was told that the money was lost because he had not answered his digital post, “then I got silent. DP is the digital side of the world and I’m not digital, I’m ‘hammer and nails’ and like to read my mail on the loo”. He went to the local council to get help, “they tried to calm me down, but it tears you down”. He was registered in DP by his mother two years before to help him get a hold on his finances after a divorce, but he doesn’t use it. The local government case handler contacted Payment Denmark to tell them that an error had occurred, but the message was that citizens are obliged to read their digital posts. Jimmy cannot understand why the public sector doesn’t work together, “social workers run in and out of my house all the time, they *know* that I’m a single parent” and he finds it unfair that Payment Denmark sends him physical letters when they need him to react, “while I have lived here, they have sent me five physical letters about child support that they claimed I had not paid. These letters were sent to my physical mail box, but when it’s about paying money to me, they cannot send me a physical letter when I don’t see the digital letter”. Jimmy explains how it feels. “I have a computer, but I cannot, with my brains, sit down and handle my things on the computer. When there is a letter on the table, it is different, and then I can manage. I’m trembling in my body when I need to use this digital shit, but you have to do it today, it’s terrible.” (Guldagger, 2013).

DP may affect different citizens in different ways and due to different reasons. One reason to lose citizens’ rights is if the citizen is so overwhelmed with the application procedure that he refrains from applying for welfare benefits. “And that’s, where I feel the worst, where someone comes in and says, ‘If it’s like that [that he should serve himself on the computer], I don’t care,

I will not even try', well, that is, those citizens giving up without having received what they actually need"), and "we may lose someone; those that do not become digital". "My father in law, he must apply for retirement pension. I say, you must use the computer, login to Citizen.dk, but then he needs EasyID, and he will not have that because, as he says 'computers are crap and, whatever you do, it does not work', you cannot explain these matters to such an old, hidebound farmer" (staff). Welfare benefits applications traditionally were handed in by written forms. Some have been substituted by digital self-services but for many applications, the form has just been digitized to a PDF, which is sent to the citizen by DP and the citizen needs to print, fill out and return by mail.

Another reason is where citizens are not sufficiently motivated to open DP. First, this can entail collection fees if the citizen has not seen an invoice (housing tax, unpaid tax, resource consumption and other debts to the public sector). Staff report that citizens might not be aware of both the invoice and subsequent reminders and that citizens only learn about it, when the invoice and reminder fees are passed to debt collection. Second, a DP with announcement of reduction in salary due to public debt may be overlooked and may entail major inconvenience for the citizen (less 'take home' pay). Third, an offer that should be accepted within a deadline (daycare, nursing home etc.) will be lost if not noticed. The NDP study revealed cases, where case handlers avoid using DP if they doubt the DP capabilities of the citizen and the public offer is of great importance for the citizen. For instance, when receiving an offer of child day care so the parent can return to work. An employee in a daycare department reports that

[i]f I send via DP, [it] requires that [the] parents print the letter and send back or send an email to me. There are parents who will never get [that] done (it may be the very young parents, bilingual or low skilled). Do I know in advance that it will not succeed, I will send a regular letter, so they have it in the mailbox and thereby [can] physically sign and deliver acceptance at the municipality" (daycare administrative staff)

Citizens may also be summoned to meetings - for instance, citizens that receive unemployment benefits - to ensure that they are actively searching for jobs. If they fail to attend a meeting, unemployment benefits will be reduced. Similar procedures exist for citizens that receive other welfare benefits. A not seen digital post may also lead to delay of services that a citizen may be in need of. An employee reports the case of a mentally disabled young man who received all the documents needed for assistive help in his DP and that the personal assistance was delayed with several months because he didn't access his DP.

300 citizens filed complaints in 2013 because they were denied 3 months child benefit for not having handed in the confirmation about still being a single parent within the deadline. Payment Denmark had sent the confirmation form as digital post and had further sent a reminder and the decision of stop for child benefits payment - also as digital post. The citizens were not aware that they had received DP. Payment Denmark stopped the benefits with reference to the Public Digital Post law.

Enforced e-government: What's the point? Legislation allowing citizens' rights and opportunities, legislation that forces public authorities, rather than citizens, legislation that gives citizens objectively right in disputes with the public administration, legislation adapted to citizens' needs instead of public administration needs, that's what is needed. What if the public sector improved the digital world so much that individuals voluntarily chose to use digital services? (citizen).

6.1.5 No total communication flow control

During the NDP study, we received an answer from a local government in HTML code, which was not readable (incidents of this kind were also reported by staff). First after several e-mail dialogues, the digital post responsible in the municipality accepted that there was an issue. To examine what was wrong, it was necessary to involve the case handler to check operating pro-

cesses, the secure e-mail system that delivered the e-mail with the message to the Digital Post operator (e-Boks) and e-Boks as operator to check how the message was handled within the Digital Post system. No actor had the total technical knowledge or content access to be able to trace the message from Outlook and secure e-mail system to the DP and from DP to Citizen.dk. The digital post responsible at the local government did not have technical skills or necessary system access to control manipulation of the file from Outlook to the secure e-mail system. The secure e-mail system vendor did not have access to the content of the message after the e-mail was received by DP and the e-Boks technician did not have access to the message content to be able to communicate this with the secure e-mail system vendor. The e-Boks technician was not allowed to tell the secure e-mail vendor whether the message had reached the citizen and was not allowed to tell the citizen whether a message to him had been delivered by the secure e-mail system. Many benevolent actors spent 4 weeks to solve the mystery and we had to conclude that neither one party nor the right combination of parties were able to trace a digital post from the local government to the citizen. The local government declared that “the log files show that an answer [to the citizen] was sent the 6. June 11:04. I can guarantee that the local government has answered the inquiry from the citizen and have done it properly”. The combination of non-transparent system flows, the involvement of many parties (thus unclear responsibility) and the definition by the law that the citizen has received the message (and has the responsibility to act upon it) if it is sent from the public institution, may prove to violate citizen’s rights.

6.1.6 Communication barriers

DP has been explored from the citizen’s end, including how to find the public institution, how to initiate a DP and the answer from public sector (the NDP study). Examination revealed a range of communication barriers concerning, which public institutions to find in DP, how to find the right institution, how to find the appropriate mailbox and understanding the answer from the institution; for an overview of the findings see table 13. This draws on the investigation of 243 Danish public institutions. First, only 4 of 5 public institutions were included in the DP address book even though it had been mandatory for all public institutions since 3 years. Second, 15 institutions were nonexistent (had been merged or closed). Not all public institutions utilized the advantages of the digital communication, while some used old fashioned letter templates and 1 of 5 did not include the message-thread. However, the most severe may be the technical attributes of the answer. When the citizen receives the answer, it may have several – to the citizen – confusing technical attachments and there may be text in the message that stem from the internal handling in the public institution of which, both may hamper communication. An example of a DP answer is displayed in figure 36 to demonstrate the comprehensiveness of a DP message.

A similar examination of answers one year after from 8 different local governments in 5 different subject matter fields (sickness benefits, building, day care, the elderly and young children) revealed that common procedures even within a local government are not applied or do not exist. It was concluded that it appears that the case handler and/or the department often decide how to configure DP, making it difficult for the citizen (Berger & Sørensen, 2014).

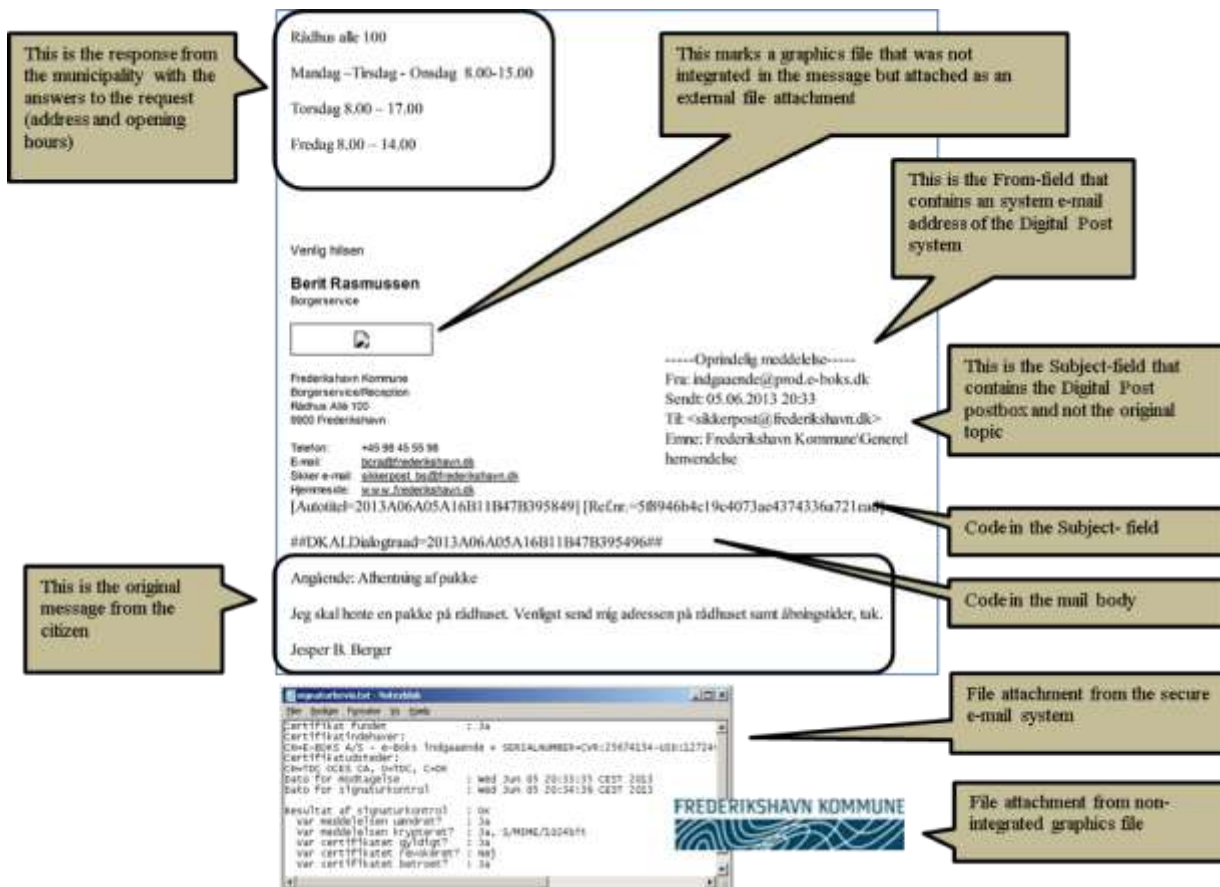


Figure 36 An answer from a local government through Digital Post

Table 13 Communication characteristics of Digital Post

Public institutions	N	Percentage
Has no a postbox in Digital Post	289	18
Non-existent institutions	243	6
Free-text format in answer	80	93
No message thread (history)	80	18
Disturbing attachments	80	49
Inappropriate internal forwarding text	80	13
Inappropriate From-field, To-field, Subject-field, codes in mail body or original subject text placed in mail body	80	100

6.2 Impact on civil servants

The perceived impact on staff from DP was explored in various ways. I observed civil servants from inside struggle with DP in the CCS projects and worked actively with some of the issues both in the CCS and ACS action research studies. Staff directly addressed the impact from DP in the Delphi study (CCS1), in the focus groups (ACS1) and in the CSTU survey. Finally, MDP revealed a variety of operational issues as in 2 of every 3 public institutions. Findings were reported in papers 2-7.

As with the impacts on the citizen, I acknowledge that DP entails positive impacts on some public employees, especially when they experience that the context, the content and the citizen constitute a situation where DP is successful, entailing reduced workload, greater job satisfaction and flexibility. However, this study has revealed e-government harm to a significant extent.

6.2.1 Work situation

One reason for perceived increased workload, is that citizens do not trust the DP channel, they are not sure that the digital post has reached town hall, and if it's important for the citizen, for instance an application for benefits, they make a phone call to be assured. When citizen action is needed to forward a case, staff report that they must call or mail citizens that have not seen the DP. In many situations, written documentation is demanded of citizens by public institutions and companies. When citizens have no printer, employees in the Citizen Service Centre must find the documents that were sent digitally, print and send as physical mail to the citizen. Furthermore, elderly citizens have difficulties attaching documents to the DP, which leads to incomplete applications, where staff must contact the citizen again. When citizens have not checked their DP, a deadline may have been exceeded, which may have different implications such as fines that must be generated or further case handling in order to restore the situation for the citizen. DP is not designed to cover a workflow with several actors, for instance, a document that must be signed by both citizen and employer or physical mail that was before sent to the address of the family, where both adults had access, must now be sent as two digital posts, one to each adult. Or situations, where citizens were used to sharing documents (for instance regarding common property) and now, complexities arise when the digital post is only sent to the person that formally is the one owner.

Staff have difficulties finding the digital post when citizens call to inquire due to the message being "wrapped" in an e-mail from DP (and further, within a secure e-mail report), where the name of the citizen or the subject of the message is only in the e-mail text. During the NDP study, we wrote to the institutions that had not answered our digital post and asked why they did not answer. An employee from a local government called and said that she was not sure that they had received our digital post. She asked about the sender name and searched (in Outlook, we were told), but said there was nothing there. Then, she asked for the subject, searched again, and finally concluded that they had not received a digital post from the sender. She couldn't find it because of different "codes" from DP that occupy the fields that you would normally search by (for instance name and subject), see a received DP in figure 11 (wrapped in a secure e-mail) and figure 12 (the content e-mail). Staff must open every e-mail to find the right digital post.

In some situations, a dialogue with the citizen is more appropriate than using DP, for instance to book an appointment (two calendars that must be matched) or where the citizen needs further information to fulfill an application or information from the citizen must be corrected. Staff experiences this as troublesome to do with DP.

Generally, staff spends much working time explaining to citizens what DP is about and how to handle it. Another pattern is that staff are very conscious about when *not* to use DP, which is if there might be serious consequences for the citizen and the employee is convinced that the citizen is not able to handle DP (the elderly, the migrants etc.). One respondent sends offers for nursing home to elderly citizens that may not be able to handle DP and "that is why I always call the relatives to make them aware that there is an offer in DP" and that is surely not efficient. Staff even tell of citizens that try to make staff send mail or e-mail instead of DP.

The perceived workload may also be increased because citizens press for quicker response due to the more flexible and quick communication that DP offers.

The insecurity about whether the message arrives to the recipient is not only prevalent amongst citizens, but also amongst staff. The lack of receipts from the system when the message reaches the citizen and the lack of receipts when a message cannot be received are noted by staff, since both kinds of receipt are possible both in e-mail and physical mail.

Increased workload on staff from implementation of the Danish e-government strategy has been claimed on an empirical background from various Danish Citizen Service Centers due to staff spending much more time helping citizen than expected and half of operations never succeed due to supposedly technical reasons (Mortensen, 2014).

Besides the perceived increased workload and insecurity of the new channel, staff are very frustrated about the digitally imposed assistance restrictions. Before, staff were used to helping the citizen fill out forms etc. but because of the lack of sharability (see 0), staff are no longer allowed to collaborate as directly as before. Further, staff at the Citizen Service Centre report that some elderly citizens cannot even handle the mouse, but staff may not help citizens operate the computer. These situations make some citizens angry and frustrated, which affects staff. Staff also report that they need to defend and justify the reasons why local government uses DP because some citizens think that it is a local decision.

6.2.2 Technology

Generally, the study reveals DP as complex and overwhelming due to design and implementation flaws - and to a high extent - as misaligned with work processes.

Many statements regard the integration with the case handling system. In some departments, a case must be manually generated in the case handling system before a digital post can be sent, in others, the digital post must be manually imported into the case handling system afterwards. All messages to citizens need to be archived in the case handling system; hence, this integration is vital for efficient work processes. From municipalities that have managed to integrate DP with the case handling system, staff report that too many documents are being filed, thus leading to reduced case overview, because they can no longer select the documents that are necessary to file.

Staff at CCS clearly – and as the top priority wish regarding DP – stated that digital post should be forwarded directly to the case handler and should be easy to locate in the system. Further, it is vital to the bureaucratic process that every administrative step – especially regarding communication with citizens – can be documented. Staff experience exactly the opposite - that it is difficult to locate a digital post, that it is not forwarded to the relevant case handler and that no receipts for sending or receiving messages are available. Further, trivial operations such as attaching documents to the digital post and answering a digital post from the citizen are perceived as troublesome. The lack of receipts for received and send messages was a major issue in the NDP study and one of the major reasons why so many public institutions were not able to locate the received digital post or to distinguish whether they had answered the digital post or not.

Work processes are not limited to communication between one civil servant and one citizen. There are many situations where a number of actors are involved in the communication. Work processes that involve more actors are poorly supported by DP, mostly because the system lacks the flexibility of e-mail and because the system is based on the CPR, which as sensitive information, must not be exposed, which hampers printing of documents. A further complexity results from some actors in the process demanding a signature and stamp or simply not accept-

ing a digital post, which forces the case handler to shift between digital and analogue process steps during the case handling.

I work in a job center and send forms in connection with the conclusion of agreements with companies. Often, an internship is established with start-up from one day to the other, and this is supported by DP with both citizens and employers that an offer can be quickly initiated. The big challenge is that many citizens do not possess a printer, and it may take time before we receive the signed form back. I have found an employer who could not accept a form without 'physical' signature. In this case I had to print the form, sign, scan and send by secure mail. (staff).

Due to exemption from DP - and during the gradual adoption process from 2010 – the DP environment is not purely digital. As of 1 November 2014, 10% of the Danish citizens were exempt from DP and should receive messages as physical mail, which has a longer delivery time than DP. The Public Digital Post Law states that a message is valid when it can be retrieved from the DP system. In many situations, public affairs are regulated by time limits that the public institution must keep toward all citizens, for instance a consultation period or a maximum response time. Further, information and offers must be given to the entire group of citizens at the same time to treat all equally. This is a challenge to handle when some citizens receive the message after 1 minute and others after two days and entails cumbersome planning and operations to comply with.

The death of a citizen is another situation where DP is challenging. When a citizen dies no one has access to the DP and staff must be aware that they do not send vital information to the dead citizen that in the analogue world would be easily retrievable by the relatives as would emptying a physical mailbox.

6.2.3 Lack of interoperability with feeding systems

In 2010 when DP was launched there was no integration with the other systems, i.e. the application systems and ERP systems that generate the attachments that the output manager sends to DP, or the ERP systems that must receive data from DP, see the e-government enterprise architecture (figure 2, p. 12). The case handling systems are used to archive all documents related to the case and filed under the CPR. This system is vital to local government task handling due to the obligation of document filing (the Administration Law). Practically every part of a communication with the citizens has to be filed in the case handling system. The integration between case handling systems and output manager systems and/or Outlook/secure e-mail systems is vital to efficient and effective operations and documentation. One advantage is that case handling systems can draw on metadata from the digital post which normally will not be applied in Outlook. Figure 13 (p. 23) shows a received digital post in a case handling system. Note that message subject and citizen name is extracted into the overview, contrary to the cumbersome and manual extraction of key data in Outlook (compare with figure 12, p. 22). Case handling systems, further, have the advantage that they can administer the DP sending and reception. However, these functionalities were only released in some of the case handling systems during 2014. Staff reported from the beginning of the period up till 2013 about lack of integration with case handling systems.

Several subject matter systems have not been able to integrate with DP, for instance the pension system, sick benefits system, health care system, unemployment benefits system, funeral benefits system and also ERP systems, such as finance system, debt administration system, HR system etc. These legacy systems produce an immense amount of physical letters to citizens. The vast majority of these systems are from the largest public sector systems' vendor, KMD. Along with systems from other and smaller vendors, these have only gradually been converted to being able to send messages through DP.

6.3 Impact on organizations

The impact on organizations stems from economic loss, legal issues and further barriers that local governments could not control. Most of the empirical studies have contributed, but especially CCS, ACS, MDP and NDP, results were disseminated in paper 2 and paper 4.

6.3.1 Economic consequences

DP has economic consequences for local governments because the State funding has been reduced from 2013 according to the anticipated reduction of postal costs in the municipalities, see 2.2.6, p. 25. Evaluation is done by finding the *Result of the year*, i.e. comparing the realized cost reduction with the reduction of state funding. If the realized cost reduction is bigger than the reduction of State funding, the local governments will have a surplus. If realized cost reduction is smaller than the reduction of State funding, local governments will have a deficit. Within a fiscal year, all costs must be covered by all earnings. If costs are higher than expected, local governments must reduce other costs, generate more earnings or draw from the liquidity. Evaluating the result (impact from DP on organizations) entails evaluating both parts of the equation, (I) the reduced postal costs and (II) the reduced State funding.

The reduced postal cost for 2013 is found by subtracting postal cost related to 2013 from postal costs related to 2012. Hence, the calculation is - in theory - very simple. In practice, however, it is not so simple; see communication flows between local governments and citizens/companies in figure 38.

- The reduction of State funding is grounded in total physical mail, both to citizens (R1) and companies (R2), letters to companies are on average more costly than letters to citizens, i.e. local government would benefit more by reducing physical mail to companies
- Payment Denmark operates on behalf of the local government. Postal costs are charged to the individual local government, thus included in the DP funding reduction
- Messages can be generated as ad-hoc messages (S1, 1), automatically by systems (S2, 2+3) or as physical letters (S3, 4)
- Messages can be received by recipients as DP (C3, 7+8) or physical mail (C2, 9+10)
- Ad-hoc messages (S1) are delivered from local governments and Payment Denmark through an output manager (C1, 1), which generates digital posts (C3, 5) or physical letters (C2, 6) for delivery through postal handlers
- Automatic system messages (S2) are delivered to DP (C3, 2) or as physical mail to postal handlers (C2, 3)
- Physical letters (S3) are delivered to postal handlers for delivery to recipients (C3, 4)
- Local government used DP in 2012 and Payment Denmark started operations during 2012, thus it is necessary to include all actors, all senders and all channels for both years to be able to calculate the result

The result may be calculated in different ways, according to the equations, given in figure 37. The result is calculated as the reduced postal costs minus the reduced State funding (a). The reduced postal cost is calculated by subtracting the postal costs one year from the postal costs for the year before (b). The total postal costs derive from the use of output manager (C1), postal handlers (C2) and DP (C3) for local governments and Payment Denmark (c). Total costs may be calculated as the volume (V) times the unit cost (p) for a specific channel use (C) (d). The unit cost for the output manager, $p(C1)$, and DP, $p(C3)$, depends on size of the file, color

etc. Unit cost for postal handler, $p(C2)$, depends on the weight of the letter. Together with the unit cost for the postal handler there is a unit cost for material (envelope and paper), $p(M)$. Total costs for ad-hoc messages include costs for output manager, postal handler and DP for local governments and Payment Denmark (e). System messages are send directly to DP, thus there are no output manager costs. Total costs for system messages are calculated from volume and unit cost for postal handlers and volume and unit cost for DP (f). Total costs from physical letters are calculated from volume and postal handler unit cost (g).

(i): $R_i = \Delta P_i - \Delta SF_i$

(ii): $\Delta P_i = P_{i-1} - P_i, i=2013..2015$

(iii): $P = \sum P_j, = \sum (P_j(S1) + P_j(S2) + P_j(S3)), j=1..2$

(iv): $P = V * p(C)$

(v): $P(S1) = V_1 * p(C1) + V_5 * p(C3) + V_6 * (p(C2) + p(M)), V_1 = V_5 + V_6$

(vi): $P(S2) = V_2 * p(C3) + V_3 * (p(C2) + p(M))$

(vii): $P(S3) = V_4 * (p(C2) + p(M))$

(viii): $\Delta P = \Delta V_{7,ad-hoc} * (p_{citizen}(C2) - p(C1) - p(C3)) + \Delta V_{7,system} * (p_{citizen}(C2) - p(C3)) + \Delta V_{8,ad-hoc} * (p_{companies}(C2) - p(C1) - p(C3)) + \Delta V_{8,system} * (p_{companies}(C2) - p(C3))$

C1 = output manager, C2 = postal handler, C3 = DP, i = year, j = actor, k = local government, l = flowindex, M = material, p = unit cost, P = cost, R = result, S1 = ad-hoc messages, S2 = system messages, S3 = physical mail, SF = State funding, V = volume
 Numbers refer to communication flows depicted in figure 38
 ΔSF_i is given in table 3, p. 27 (i=2013..2016)
 All equations may be applied on a national level ($P = \sum P_k, k=1..98$) or an institutional level ($P = P_k, k=1..98$)
 J=1: Local governments, j=2: Payment Denmark

Figure 37 Calculation of economic result of Digital Post

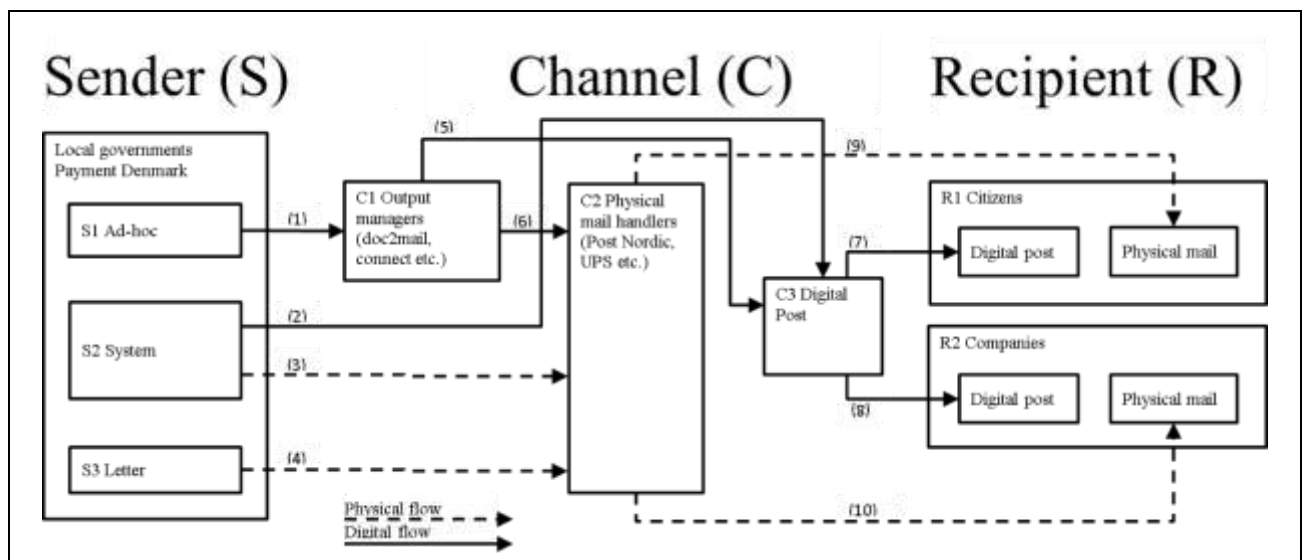


Figure 38 Communication flows from local governments to citizens and companies

Evaluation approaches

I: The following approaches are possible for assessing the reduced postal costs

- E1. Directly calculating P after (c) on a national level (sum of postal costs for all 98 local governments). Public institutions are mandated to account for postal costs, thus the necessary data ought to be recorded. The challenges are many: First, postal costs are relatively low and accounting for these costs have low administrative priority, hence quality of data might not be sufficient (this was the case in CCS and it would be time consuming to go through the accounts). Second, there is no central register of postal costs from all local governments, thus data should be gathered by contacting all the institutions, and finance departments may not be willing to allocate resources to extract and manipulate data for external use (this was the case in both CCS and ACS). Third, institutions might not account for the IT related postal cost as postal costs but as IT costs, including licenses for output manager, output manager transactions, system generated letters, costs for DP (based on contacts with municipalities). Given the necessary data, this model allows to evaluate the total result.
- E2. Directly calculating P_k after (c) for particular local governments. The same challenges would be valid as for the total national evaluation (E1), however the task of collecting data would be less time consuming. This would make it possible to calculate the result for one or a number of local governments, but not the total.
- E3. Indirectly calculating P on national level after (c) by collecting the invoices to local government from postal handlers and system vendors. System vendors for output managers would be able to provide $P(V_1)$. Further the postal handler charges the output manager venter for postal output, $P(V_6)$. The DP venter charges the local government directly, $P(V_5)$. The DP vendor charges the system venter for automatically generated digital posts, $P(V_2)$, and the system vendor charges the local government. Postal handlers charge system vendors from automatically generated systems letters V_3 and system vendors charge local governments directly, hence, $P(V_3)$ would have to be collected from system vendors. Postal handlers would provide $P(V_4)$. Further, Payment Denmark charges local governments directly for ad-hoc generated messages and data would need to be collected from Payment Denmark, $P(V_1)$. It would be reasonable to only include the biggest vendor of system generated mail (KMD) and the biggest output manager vendor (KMD). Further, it would be reasonable to only include the biggest postal handler (Post Nordic). Hence, this model could be applied by collecting two figures of accumulated costs to all municipalities (from 2013 and 2012) from KMD, the DP vendor, Post Nordic and Payment Denmark.
- E4. E3 could be applied with volumes and unit costs following (d) and (e)-(g). Volumes may be easier to achieve from vendors because it may be done without involving Finance departments.
- E5. Indirectly calculating P_k for particular local governments like in E3 following (c). Since costs should be collected for particular local governments from external parties, it would be necessary to acquire consent from every local government. This would not allow to calculate the total result, only results for particular local governments.
- E6. Similarly like E4, E5 could be applied with volumes and unit costs following (d) and (e)-(g).
- E7. An estimation of the result could be derived from the number of digital posts, V_7 and V_8 . The philosophy would be that every single digital post has substituted one physical letter. The reduced cost per letter is calculated by the volume times the unit cost for the physical letter minus the costs for the digital post. Volume needs be parted in recipient (citizens, companies) and mode of generation (ad-hoc, system) due to different unit costs (h). The es-

timation would be too high if one digital post does not substitute one physical letter. This would be the case if citizens and staff have adopted an e-mail behavior leading to more communication that may before have been included in one single physical letter.

II: The following approach is applicable for evaluating the reduced State funding:

E8. The reduced State funding of DKK 103 Million in 2013 was based on unit costs and volumes (table 14), namely 30.9 Million ad-hoc letters and 24.6 Million system letters in 2012. The reduced state funding was distributed amongst local governments according to number of citizens. Hence, it is possible to calculate the estimated number of DP potential in every local government. These numbers could be evaluated by assessments of DP potential from the local governments themselves.

It would be possible to apply each model as a partial view of only system generated letters/DP (V_2 and V_3) or ad-hoc letters/DP (V_1 and V_4).

Other partial models could be applied, for instance only estimating reduced State funding related to ad-hoc messages.

Access to data

Application of the evaluation models will depend on access to data. E1 is the most reliable model, but also the most time consuming and must be regarded as unrealistic given no central registration of accounted for postal data. However, the government could easily establish these data by authorizing public institutions to account for postal costs after a centrally decided account plan. E2 was tried amongst the network of local governments from the NDP study. The heads of Citizen Service departments or CIOs were generally positive, but lack of allocation of resources in the Finance departments stopped the effort. E2 was tried with the two involved municipalities in this study, however, the Finance departments could not allocate the necessary resources to extract data or assist in translate the accounting data.

E3 and E5 were pursued for more than a year. Post Nordic accepted instantly to hand out data if it was approved by the Digitization Agency. After a long dialogue with the Digitization Agency, they said, it was not their business and they referred to LGDK to accept that data could be extracted for research on behalf of the local governments. LGDK would not do that and gave no reason but recommended the researcher to ask every local government. An attempt was made by an electronic survey to every local government for consent for data retrieval from Post Nordic, their output manager vender and their systems vendor on their behalf. This survey created many denials, many questions, some mistrust and a few acceptances. Hence, the E3 strategy was dropped. During another project, where 8 municipalities were involved, it became possible to get consent to retrieve postal costs from 2010-2013 from Post Nordic. Even though this formal part was relatively unproblematic (because it was introduced in the contract regarding the other project), the contact in Post Nordic had changed department and it took more than 6 months to actually get data.

E4 and E6 were tried as alternatives when the others failed. Due to an agreement with KMD, I had access to transaction data from the KMD output manager, hence V_1 , V_5 and V_6 but due to lack of time, it was not possible to pursue this.

To be able to conduct the research of DP adoption in local governments (paper 2), an agreement was established with the Digitization Agency regarding access to DP transaction data. Hence, E7 would be possible to apply.

E5, E7 and E9 have been performed.

Reduced state funding

External written communication entails direct costs and indirect costs. The indirect costs are the time that the employee uses while handling the external communication. The indirect cost is difficult to measure and it is divided into a great number of employees within a public institution if this task is not centralized. In Denmark, most of public servants handle mail communication. In a physical letter context, the direct costs include stamps and material (paper, envelopes etc.). In a digital post context, the direct costs constitute licenses and operation costs for the systems that are involved in the process.

The Ministry of Finance elaborated the business case (BC) for the DP project for local governments. The BC was based on postal costs for local governments for 2011 and covered 2013 and beyond (LGDK, 2012). Elected key figures are given in table 14. The prerequisite of the BC is that every physical letter that can be substituted by a digital post reduces costs with unit cost for the physical letter minus unit cost for the digital post (equation i, figure 37).

It is estimated from the Ministry of Finance that DP will reduce costs by the following:

$$\begin{aligned} \text{Ad-hoc DP (S1):} & \quad 5.5 + 0.9 - 1 - 0.25 = 6.05 \quad (\text{DKK per letter}) \\ \text{System (S2):} & \quad 5.5 - 0.79 = 4.71 \quad (\text{DKK per letter}) \end{aligned}$$

Table 14 Key figures from Digital Post business case (LGDK, 2012)

Prerequisites for DP business case		
p(materials, ad-hoc)	0.9	DKK per mail
p(stamp, ad-hoc)	6.4 ¹	DKK per mail
p(stamp + materials, system)	5.5	DKK per mail
p(DP, ad-hoc)	1	DKK per digital post
p(output manager)	0.25	DKK per digital post
p(DP, system)	0.79	DKK per digital post
Percentage mail to citizens	64	% of total
Number of ad-hoc letters 2012	30.9	Million per year
Number of system letters 2012	24.6	Million per year
Percentages of citizens registered 2015	80	%
Percentages of companies registered 2015	100	%
Reduction factor letters per year	97.5	%
Reduction factor digital potential	90	%

¹⁾ From the spreadsheet model underlying the business case

Evaluation of postal costs from 2012 to 2013 for 8 local governments

The local governments had all started using DP before 2013, thus communication with stakeholders was both by physical letters and by DP. Following E5, eight local governments allowed postal costs on a yearly basis to be made available from Nordic Post to the author. One local government, however, had *increased* their postal costs from 2012 to 2013 with more than 30% and they were not included. Postal costs from Post Nordic for seven local governments are displayed in table 15. These costs, hence, do not include postal services from companies than Post Nordic and does not include material. Furthermore, postal costs from system generated letters are not included, hence the postal costs does only reflect the ad-hoc letters.

All local governments have had a decrease in postal costs from 2010 to 2013, but only one local government had a decrease from 2012 to 2013 that matched the reduction of the State funding. Thus 6 of the 7 local governments realized a deficit from DP.

Table 15 Postal costs, reductions and consequences, 7 local governments

Postal costs per citizen (DKK) ¹	LG ₁	LG ₂	LG ₃	LG ₄	LG ₅	LG ₆	LG ₇	All
2010	31	36	34	29	21	32	43	32
2011	27	30	28	28	13	23	36	27
2012	23	27	17	24	9	18	28	22
2013	18	16	12	21	8	11	20	17
Cost reduction, 2012 to 2013	4	11	6	2	1	7	8	5
Reduced State funding²	10	10	10	10	10	10	10	10
Result	-6	1	-4	-8	-9	-3	-2	-5

Note 1: The 7 local governments cover 9% of the Danish population

Note 2: The reduced State funding only includes ad-hoc letters (DKK per citizen)

Evaluation of cost potential, 4 local governments

A Danish consultancy firm estimated the DP potential – the physical letters that could be converted to digital post – to 127 Million letters yearly (Rambøll, 2010). The Danish Ministry of Finance estimated the potential to 55 Million letters yearly, four years later (LGDK, 2012). Unfortunately, there were no standardized estimations from local governments to be able to assess the validity of the national assessments. For this study, postal potential analysis´ were gathered from local governments to evaluate the national estimates, thus applying E8. Local governments´ data collection methods were not always sufficiently documented and the evaluation may only be indicative.

Table 16 Digital Post potential, local government and national assessment

DP potential (1000) ¹	LGa	LGb	LGc	LGd	LGe	Rambøll	LGDK
Assessment	2010	2010	2010	2012	2012	2008	2012
Population	319	42	559	84	41	5603	5603
Ad-hoc (S3, V_{4 in})	110	110	755	150	130	74000	30900
System (S2, V₃)	1500	100	1940	n/a	n/a	53000	24600
Total	1610	210	2695	150 ²	130 ²	127000	55500
Total per citizen	5046	4998	4817	1795²	3193²	22668	9906

Note 1: The five local governments cover 19% of the Danish population

Note 2: Does only include ad-hoc letters

The DP cost reduction potential can be assessed by counting letters from different departments and/or calculating from postal costs (system vendors and postal handlers). I searched the local governments´ network for local governments that had conducted postal analysis before DP. Only very few were found and they were conducted according to very different models, i.e. not including both ad-hoc mail and system mail or not including both letters to citizens and companies. When further, reduced for outliers, only five postal studies contributed to compare the potential of ad-hoc letters and only three of system generated letters. The potential from different local governments´ are gathered, see table 16. The partial results, including only ad-hoc letters were reported in paper 2. The estimate from the consultancy (Rambøll) is double that of the Ministry of Finance and both seem to be much more optimistic about the potential than the local governments. Local governments only found around half the potential then that of the Ministry of Finance. In paper 2, it was claimed that the Ministry of Finance was overly optimistic about the potential of DP postal cost reductions.

Evaluation of the DP result, national level

The numbers of DP, ad-hoc and system, were found from DP transaction data after having categorized each applied system from each municipality. Table 17 displays the number of DP for local governments and Payment Denmark for 2010-2014

Table 17 Evaluation of Digital Post business case

Number of DP (1000) ¹	Sender (S)	Sender mode (S1, S2)	2010	2011	2012	2013	2014
	Local governments	Ad-hoc	21	204	496	1275	4730
		System	1497	3646	4212	4820	12407
Total			1518	3849	4708	6095	17137
	Payment Denmark	Ad-hoc			17	313	758
		System			894	2193	4026
Total					911	2506	4784
Total			1518	3849	5619	8602	21921

Note 1: The quality of the transaction data does not allow a distribution on recipients (citizens/companies)

The baseline for the reduced State funding is 2011, hence, the reduced funding relates to the change in postal behavior from 2011. The evaluation of the DP result after E7 is shown in table 18 for 2013 and 2014. The anticipated and realized digital posts are displayed in figure 39.

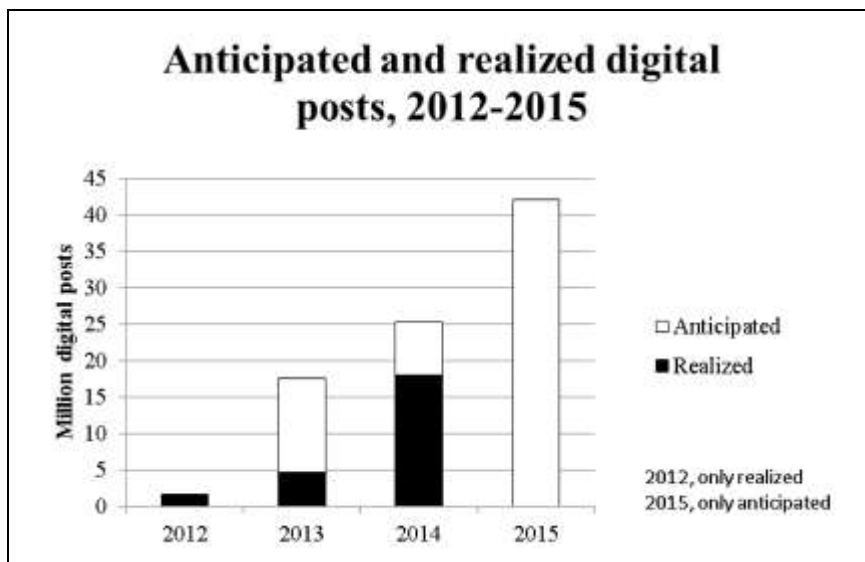


Figure 39 Anticipated and realized digital posts (baseline 2011)

The reduction of State funding in 2013 was based on 17.6 Million DP. The local governments and Payment Denmark generated $6.1 + 2.5 = 8.6$ Million DP in 2013 and the increase from 2011, thus, was $8.6 - 3.8 = 4.8$ Million. There was a deviation of 12.8 Million DP or 73%. This resulted in an estimated deficit of DKK 78.8 Million in 2013. The negative deviation in 2014 was 7.1 Million DP or 29%, with an estimated deficit of DKK 38.8 Million. The local governments would have had to reduce head counts by nearly 160 in 2013 and nearly 80 in 2014 to balance the deficit.

Table 18 Local governments' economic result from Digital Post

Number of DP (1000)	Sender Mode (S1, S2)	2013	2014
Anticipated	Ad-hoc	5466	11155
	System	12129	14144
Anticipated total		17596	25300
Realized	Ad-hoc	1384	5284
	System	3368	12787
Realized total¹		4752	18071
Deviation	Ad-hoc	-4082	-5871
	System	-8761	-1358
Deviation total		-12843	-7229
<i>Deviation total %</i>		-73%	-29%
Estimated result (1000 DKK)		2013	2014
Realized cost reduction ²		24238	92197
Reduction of State funding ³		103000	131000
Result		-78762	-38803

Note 1: Baseline is 2011, where local governments sent 3.8 Million

Note 2: Based on unit costs (LGDK, 2012)

Note 3: Local government economy 2013 (The Danish Government & Local Government Denmark, 2012)

The MDP study (paper 2) covered adoption of DP from 2010 to 2013 and showed very different levels of adoption amongst local governments (normalized SD = 0.31 for 2013). For 2014, the differences has decreased, but there are still differences (normalized SD = 0.19 for 2014). While local governments of around 50.000 citizens that send the most, send around 4 DP per citizen, the local governments that send the least only send 2 DP per citizen. They should have sent 5 DP per citizen to keep up with the reduced State funding.

In September 2014 a survey of 78 local government citizen service center managers revealed that 90% found that the anticipated cost reductions were too optimistic (Mikkelsen, 2014). One respondent stated that “it is very important not to focus on cost reductions that may come in time. It will take long time before the cost reductions are realized, we may even need more resources while implementing” (TNS Gallup, 2014b). The most prevalent causes on the citizen side are citizens' inability to use computer and Internet, poor usability and citizens' lack of understanding of regulations and procedures.

6.3.2 Legal issues

Two major issues have been prevalent during the study, namely the demand for a signature on a document and access to the CPR.

Illegal use of CPR

Early in the CCS study, it was revealed that staff did not use CPR every time they sent a digital post. If they don't use CPR, the message will not become digital but will be sent as a physical letter, thus creating a slippage in cost reduction potential. One reason for not using CPR in the output manager was the challenge with legal access for the employee to the CPR. The issue was raised in a meeting with the author from the team leaders in the citizen register department of CCS. It was argued very strongly and emotionally that team leaders would not demand that employees “break the law” to ensure DP.

The essence of the matter is best illustrated by the welcoming screen in the CPR system. The CPR system is a national system run by the Minister of Economy and the Interior and contains information on all Danish citizens and their actual and historic addresses. Local government case handlers have access to this system if they are dealing with citizens. The welcoming screen is displayed in figure 40. The background for the message is the Data Protection Law that regulates the use of confidential information. According to the law, legal access to CPR requires that CPR is necessary to the case handling.

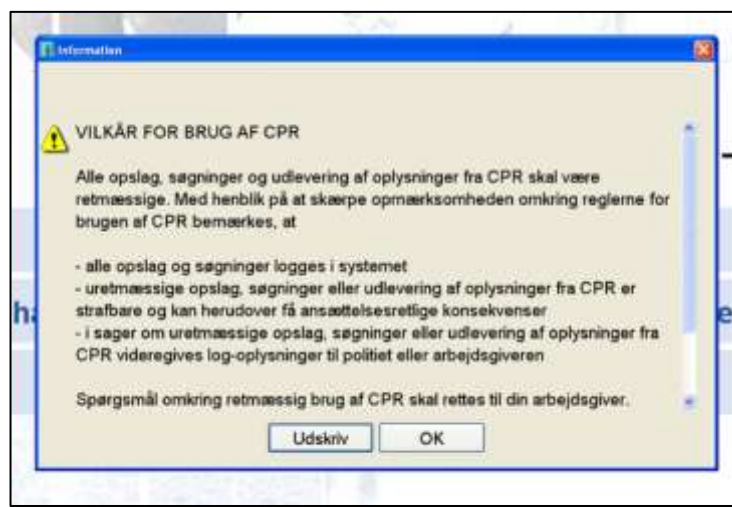
<p>Terms for using the CPR system</p> <p>All entries, queries and rendition of information must be lawful. In order to increase awareness of the rules governing the use of CPR, it is noted that:</p> <ul style="list-style-type: none"> • all entries and queries are logged • irregular entries, queries or disclosure of information from CPR is punishable by law and may also have employment implications • in cases of improper entries, queries or disclosure of information from CPR, the log information is passed to the police or the appointing authority <p>Questions about the lawful use of CPR should be directed to your employer</p> <p>(English translation)</p>	
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Figure 40 The welcoming screen in the CPR system

An employee from CCS explains about one situation, where they do not use CPR, “[w]hen we have enquiries about addresses and genealogical issues, we do not enter the CPR system and search for the CPR of the inquirer to find his CPR. This is not completely legal because it does not concern the case, we have been told”. The manager told that during a course in the Ministry for Economy and the Interior, she was told that it was not legal to extract CPR from the CPR system “just to use it as an address in DP”. At a following meeting with team leaders, the manager suggests that they require that citizens register their CPR when they require services from CCS. The minutes from the meeting states that “we think it’s a good idea, but we do not think that we may require it [that citizens register their CPR]” (minutes from team leader meeting, 19. June 2013).

The author raised the issue with the Digitization Agency in spring 2013. The Digitization Agency raised the issue with the Data Protection Agency that issued a statement in October 2013 that was not very clear. The author had a meeting with the Data Protection Agency where they admitted that the statement was held in vague formulations because they were not really aware of the substance of the issue. Two local governments raised the issue with the Data Protection Agency in the beginning of 2014 and in February 2014, the Data Protection Agency ruled that “it is not a violation with the Data Protection law that CPR is applied and hereby if necessary to inquire from the CPR system when it is necessary to clarify whether a person is registered in Digital Post.”.

The need for signature

Another significant legal issue was the general requirement of signatures and sometimes even of a rubber stamp on a letter. Signatures and stamps are some of the core symbols of public sector authority, clerical professionalism and legality. Fenger (2013) states that the administrative laws include “a large number of rules stating formal requirements about inquiries to public institutions (...) including special forms, applications, written documentation and signature” (Ibid., p. 24). Further, the Danish Ombudsman in a case in 2008 ruled that decisions from public institutions should bear a “personal signature, a facsimile signature or a digital facsimile signature”. The statement from the Ombudsman created great uncertainty until 2010, where he stated that he had only referred to digitally generated but physically delivered mails, thus not a pure digital solution. In one team in CCS, it was understood that the Ministry for Economy and the Interior had required that cases in which the authority made a decision should be “written”. Hence, as one employee argued, could not be sent as digital post. A consultation with the Ministry for Economy and the Interior revealed that the rule was to state that a decision must not be given orally (by telephone) and was from the time, where “written” was only paper and not digital.

The barrier to DP because of signature requirements are stated by staff in CCS, ACS and in the CSTU survey, and include loan documents, documents for citizen’s use abroad, documents necessary for application of driver’s license and passport amongst others.

One local government scanned all the employees’ signatures to be able to make them available while generating a letter in Word to be able to send it digitally through the output manager to DP. This practice was later deemed illegal by the Data Protection Agency. Field work in CCS in early 2012 revealed that communication to Danish citizens abroad could not be digitized because foreign authorities require evidence of document originality by both signature and rubber stamp.

The uncertainty about the demand for signature in public letters created immense uncertainty about the use of DP. LGDK criticized that state institutions as the Ministry for Tax, Ministry for Education and Payment Denmark were allowed to send e-mails and digital posts with no signatures when local government were not allowed to (T. H. Hansen, 2012). It was only in December 2013 that an amendment to the Law of Administration was issued. According to the amendment, it is only letters with decisions that must be signed and further, the name of the case handler that made the decision, stated in the letter is sufficient as signature. Thus, it was clarified that all letters from public institutions could be sent by DP. Debt certificates are special documents, regulated by other laws than the Administrative Law. Staff in both CCS and ACS claimed that loan documents that they send to citizens in cases where the local government by law was obliged to offer loans to citizens (e.g. housing loans) had to carry a signature and further, the conditions of the loan should be in the physical page where the signature was (practically, loan documents were printed as duplex with the conditions on the back of the paper). The Ministry for Justice issued a law in January 2014 that legalized digital signatures (e.g. from EasyID) on loan documents.

6.3.3 Other barriers

Five types of barriers to DP was experienced in the CCS and ACS studies, namely local management decisions, mental barriers, internal IT development projects, external IT systems and other external barriers. These barriers were confirmed throughout the other empirical studies; the existence of various different barriers may – for instance – explain the big differences in adoption of DP amongst local governments that operate under the same conditions (P3). External barriers constituted legal issues (6.3.2), resistance from other public institutions (6.5.1) and

IT systems that could not be configured locally and were not (yet) developed to be able to integrate to DP (6.2.3), hence, these barriers were not controlled by local government and had to be accepted as contributing to the economic deficit of DP. The internal barriers, however, were possible to remove by managerial attention, measurements of transactions and physical mail, governance and managerial follow-up on individual behavior (paper 4).

Local management decisions deals with issues that can be settled without development projects and where the manager is in control of the included work processes, IT systems and other resources. Elected examples are given in table 19. These barriers were quickly addressed in ACS2 and decided upon.

Table 19 Internal management decisions as barriers to Digital Post

Barrier	Explanation	Action
Address requirements	The department had agreed with private companies that paid for address information that information would be delivered in paper	Tell the companies that they cannot decide the channel no longer
Physiotherapy	The municipality handed out physical coupons to citizens that were granted physiotherapy to act as payment	Other organization of payment
Reminders for residents information	A reminder is sent as mail with a prepaid reply envelope as a service to the citizen that must document who lives at his address (to avoid fraud with welfare benefits)	Stop that service
Decisions of pension	The decision is sent out as mail because it may include many pages and because case handlers perceive that it is not right to send such important information to less able citizens digitally	Stop that service
Documentation for ad-hoc payment of salary is sent as mail	Documentation for salary is normally sent once a month. Where regulations require further payment, documentation is sent by mail	Stop that service

Many perceived barriers to DP were grounded in personal beliefs and norms. Examples of these mental barriers are given in table 20. Many mental barriers are hidden and will only emerge when examining doc2mail transactions (for no use of CPR) or which types of mail are sent (by mandating staff who register physical mail). These mental barriers were due to numerous barriers and circumvention of digital post. In CCS2, a young employee explained as a reason for not using CPR that she had been told that she should check with the system whether the citizen had registered in DP and if not, she should not enter CPR. She maintained a desk list of all her citizens without DP. Even though the doc2mail output manager is designed to avoid the critical mass effect (M. Lynne Markus, 1987). Furthermore, doc2mail was from the beginning very poor at handling attachments and this belief was very difficult to change even if the vendor did a very good job changing that in the version that was launched mid-2012, resembling the congealing of initial behavior that is noted by Tyre and Orlikowski (1994).

Table 20 Mental barriers related to Digital Post

Barrier	Explanation	Action
The citizen is not registered anyway	This belief stems from staff used to being in control of the operation and hesitant to transfer agency to the system (doc2mail) and a lack of understanding of how the system work	Information and guidance of how to operate doc2mail together with management decision
We do not know CVR	Staff were not used to using the company CVR and did not know where to find the information	Information and guidance of how to find CVR (google or cvr.dk)
Companies would not receive digital post	First, very few companies were registered in Digital Post, which did not encourage staff to send digital post. Second, staff believed that the digital post would never reach the right person “inside the big company” and if urgent or depending on answer, would not use digital post	Often, staff are dependent on answers from companies in their case handling and avoided digital post to companies. Information and management decisions was necessary
The citizen has no printer	Staff send various forms that must be printed and signed by citizens, staff hesitated sending forms digitally so as to not impose work and trouble onto citizens	This may only be mitigated by management decision
Doc2mail is more expensive than mail	When staff opened doc2mail to send a digital post, they noticed that doc2mail would send mail as priority mail, which would be more expensive than if they sent the mail from the department	Doc2mail was setup to default use priority mail instead of economy mail, system vendor changed this by configuration
Signature is needed	Even after the Administration Law was changed to allow letters from public sector without signature, staff were insecure when faced with out-of-date forms that required signature	Information about changes in the Administrative Law, requirements to other public institutions to change forms according to the changes
Decisions must be written	Staff believed that decisions in case handling towards citizens should be given in writing	The right interpretation was that it must not be given orally
Doc2mail cannot handle attachments	Using doc2mail to handle attachments was very troublesome until mid-2012, however the belief did not change even when the functionality was immensely improved	It is very difficult to discover these kinds of false beliefs as no one questions them
Doc2mail cannot send abroad	Staff assumed that letters would not be send abroad and posted regular mail	Information and guidance of which circumstances doc2mail can be applied

Internal IT projects include all the necessary configuration and integration for the multitude of systems that are operated in connection with DP. These projects would at times involve the IT department and sometimes, it would be handled by the department. Examples are given in table 21.

Table 21 Internal IT development projects related to Digital Post

Barrier	Explanation	Action
Mandatory CPR	Staff are able to circumvent digital post by not entering the CPR	Contact system vendor and have CPR field made mandatory (department)
Forms are not aligned with doc2mail	When using different forms from the forms system (KPS) and sending with doc2mail, the fields of the address collides with form heading. The same is happening with the unemployment system (Workbase)	Configure templates in forms system (IT department)
Setup reply functionality	It needs to be decided which letters the citizen should be able to reply to. The letter type should be mapped with a return postbox (e-mail)	When structure has been elaborated (department), it should be configured in DP (department) and in doc2mail (system vendor).
New system for funeral aid	System (Dafolo funeral aid) should be configured to send messages through doc2mail and deliver the userID to enable BI via the web-service	Configure system (system vendor) due to information from department
Send digitally to companies	A message delivery group needs to be generated in DP to be able to send digitally to companies	Configure DP (department)

6.4 Impact on public sector ethos

Public sector ethos is not such a clearly defined construct that it is possible to assess often how to judge when it has changed and how much. However, it is related to public interest (Pratchett & Wingfield, 1996) and ethics in public administration (Cooper, 2004). It concerns the relation between public sector and the citizenry, it is relatively stable, thus, we should be aware of tendencies of negative change because it will be difficult and time consuming to reverse these changes (Roman, 2013). Major source has been the CCS study and the NDP study.

6.4.1 The Constitution and public interest

The Danish Constitution follows the principle of the citizenry giving power to representatives in exchange for being protected against harm. The Constitution stipulates principles regarding right to work and freedom of speech, which is relevant in this context. The right to work states that "[a]ny person unable to support himself or his dependents shall, where no other person is responsible for his or their maintenance, be entitled to receive public assistance, provided that he shall comply with the obligations imposed by Statute in such respect" (Jayasinghe, 2013, § 75). From the Constitution, thus, it follows that the citizen who cannot work must receive assistance from the State and it might follow that every citizen must have the same access to welfare benefits. Further, the Danish Public Administration Law (§7) states that "an administrative authority must, to the extent necessary, guide and assist individuals submitting inquiries falling within the scope of activities of the authority" (The Danish Minister of Justice, 2014). Hence, it might follow from the spirit of the Constitution and the Public Administration Law that the public sector cannot deny the citizen benefits or assistance because she has not accessed his messages from public sector through one distinctive channel (DP).

The right to speech states that "[a]ny person shall be entitled to publish his thoughts in printing, in writing, and in speech, provided that he may be held answerable in a court of justice." (Jayasinghe, 2013, § 77). In addition, it is relevant to notice that the Constitution establishes the Ombudsman institution to control the State administration (in 1996 extended to the entire public sector) (Jayasinghe, 2013, § 55). The freedom of speech does not include the right to have the necessary information to pursue control with public institutions, but together with the section about the Ombudsman, it may follow that the necessary information should be provided to manage the public sector and to be able to communicate the results of the management.

6.4.2 Circumvention of DP

In the conducted Delphi workshops in CCS1 we asked staff, what could increase their individual use of DP and which barriers they, as individuals, experienced in relation to using DP. Prior to the workshops, we explained that the focus was on aspects that were within the individual's or the organization's control to change. We stressed that we knew that only one fifth of the population had registered to receive DP and that not all citizens would be able to use or have access to DP, but that this was *not* the focus. However, the reasons for the individual employees not using DP most greatly - and consistently across workshops - was related to the citizen. Reasons were detailed as "it doesn't work for the elderly, they don't understand it", "foreigners cannot understand Danish", "citizens that do not have a computer, cannot use it" etc. At that point, the action research group discarded these contributions to the Delphi study because participants obviously had misunderstood the task.

In subsequent studies in the same division, we analyzed the transaction data from the output manager. While 21% of the population was registered in DP, only 15% of the messages were sent digitally. This could stem from deviations of recipient characteristics from population characteristics. However, when analyzing the transactions on a personal level, we found very interesting results. Within all teams, a number of messages were sent without using CPR. This behavior would lead to a 25% loss of cost saving potential. When the CIO was told, he wanted all teams to receive a list every month of names and how many messages were sent without CPR, ranked for individuals.

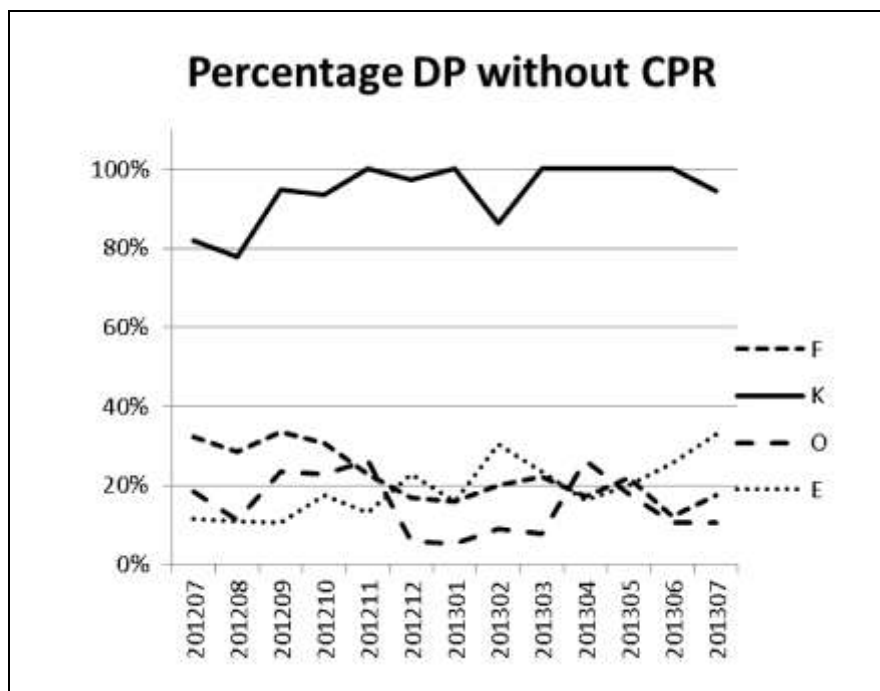


Figure 41 Messages sent without CPR (CCS2)

One cause for not using CPR could be sloppiness since the CPR field was not a mandated field and the operation is quicker for the employee without using CPR. The citizen gets the letter either physically or digitally and nobody will notice. In a group interview with one team, we learned that the team did not find DP appropriate for their kind of tasks. We later conducted a workshop with the team going through their work processes and discovered only a few work processes where DP was not appropriate from a rational work process view. When we analyzed

our data, we discovered that this team had sent absolutely no DP with CPR. Discussions with the team did not change anything, they were very emotional about it and one year later, they still only used the output manager to send physical letters. The percentages for the four teams in a one year period are depicted in figure 41, see the K-team. Overall, the percentage for not using CPR only decreased slightly and was above 20% in July 2013. Qualitative data from the other municipality confirmed that staff were opposed to DP (paper 5, paper 4) out of concern for the citizen. In the survey of administrative staff from local governments, spring 2014 (CSTU), 21% of respondents that perceived changes in service with DP reported a case, where they had omitted DP because they thought it was too poor a service to citizens. 26% reported a case where they found DP a poor service (paper 6).

Figure 42 depicts the number and percentage of messages without CPR from the doc2mail output manager from all Danish municipalities from January 2012 to October 2014. The numbers of messages without CPR have exceeded 100.000 per month with an average around 80.000 per month. The percentage related to all messages sent has dropped from 2012 from around 20% (the level seen in CCS) to just above 10%. This could indicate that there is a fixed number of particular cases with particular citizens in particular situations where employees believe it is not appropriate with DP. Further, relying on the results from the CSTU survey, there will be more staff that actually uses DP even though they perceive it as reduced service, hereby indicating potential harm to citizens. Further data analysis has shown that this is a general pattern in local governments.

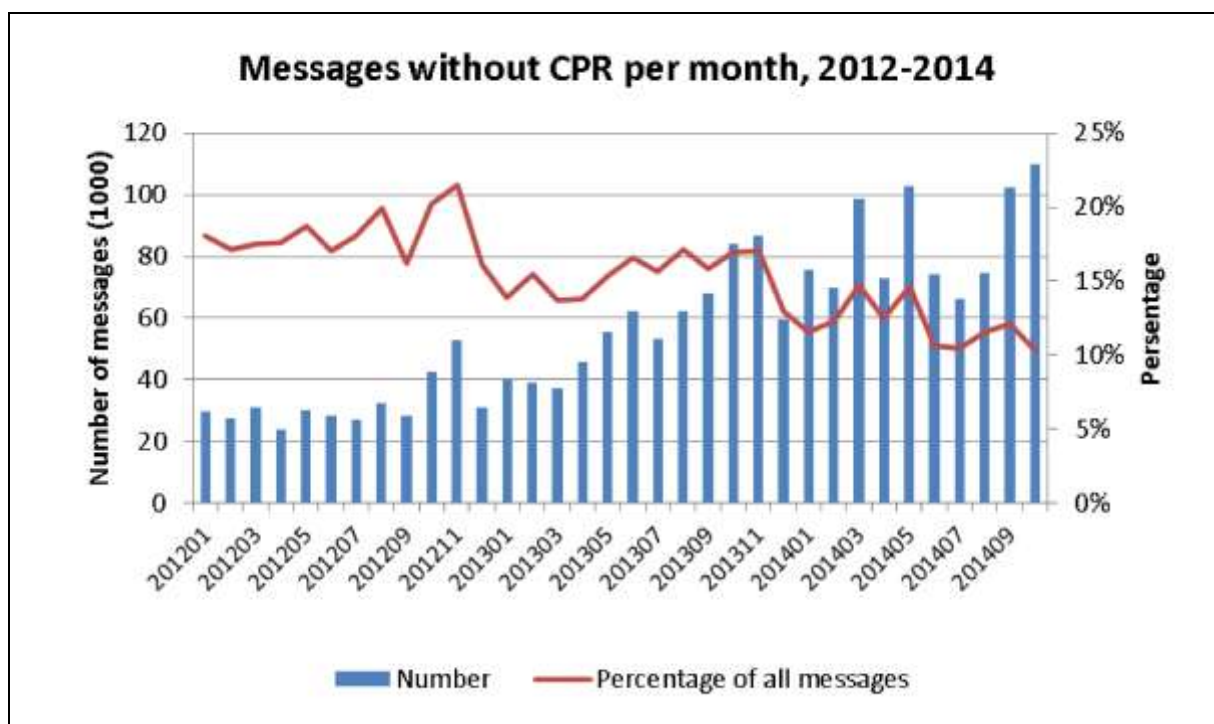


Figure 42 Messages sent without CPR, 98 local governments

6.4.3 Exemption

As described in section 2.2.6, p. 25, citizens could be granted exemption for mandatory registration in DP if applied for personally at the town hall due to not having a computer or access to Internet, see figure 16, p. 26 and figure 17, p. 26. According to regulations, the civil servant is obliged to persuade the citizen *not* to apply for exemption (The Danish Minister of Finance, 2013). As stated on the application, citizens may be imprisoned or be fined for giving false

information. The Digitization Agency launched a FAQ for public employees regarding DP. There were many questions from public employees about exemption from DP and how to handle it. Some questions from employees are given in figure 46. These questions follow the rhetoric and intention from the Legal Notice and the guide from the Digitization Agency, namely an enthusiasm in revealing if citizens cheat with the exemption.

1. Does the Digitization Agency control, whether the citizen's application of exemption is correct?
2. Does someone follow up on the reason for exemption?
3. May the citizen be exempt if he has a smart phone or a tablet?
4. Do the municipalities have to follow up on the granted exemption?
5. To what extent may the municipality inquire [about the background for the exemption]?
6. Does access to computer mean that the citizen has his own computer or does it count if the spouse has a computer?

Figure 43 Questions from public employees regarding exemption from Digital Post (FAQ from Citizen.dk, 30. September, 2014)

The 'threat' that citizens risk imprisonment or fine if they cheat with the DP exemption application has drawn some attention in the media. The Danish Folkparty has called it unworthy and the Social Democrats (The biggest party in the Government) has commented that no one will be imprisoned because of DP (Gaardsted, 2014). The Minister of Finance has declared that "the citizen's statement will be taken into account without a proper control of the correctness of the declaration" (Thomsen, 2012) and the General Director of the Digitization Agency has indicated that everybody can be exempt (even though he later claimed to be cited out of context) (Ibid.). There may be a degree of zealously in the questions from the employees that may not have been anticipated by politicians.

When I arrived at town hall to apply for exemption for DP, they [staff] were ready with all their remedies. At first, they said that I could not just mark all the exemption reasons with a big X, but had to specifically mark the one reason that applied to me. When I pointed out that according to the guide, this was confidential information, they admitted that it was okay.

Then, they told me that I should sign and stated very firmly that I was not allowed to lie, else I would be imprisoned. Now, I had really prepared myself, but I can imagine people that may not be equally prepared will feel intimidated by this behavior. To me, it just meant that I was even MORE sure that it was the right choice that I had made.

I need to say that, when my wife applied a month later, there were none of these threats or attempts to enforce. Evidently, they may have stopped threatening citizens (citizen).

When all citizens were automatically registered in DP (1. November 2014), around 470.000 citizens had been granted exemption, corresponding to 10% of Danish citizens aged 15+. The highest municipal percentage of exemption was around 22% and the lowest was 7%. The ten municipalities with the highest exemption percentage were found in remote areas (8 of 10 were islands). The ten municipalities with the lowest exemption percentage were found in suburban and urban areas (8 of 10 were municipalities within greater Copenhagen). The degree of exemption follows the age distribution. The average percentage of citizens aged 65+ in Denmark was 22%. The percentage of aged 65+ in the five municipalities with lowest exemption percentage (corresponding to 2.6% of population) was 23.6%. The percentage of aged 65+ in the seven municipalities with highest exemption percentage (corresponding to 2.8% of population) was 30.4%. The exemption percentages for age groups are given in figure 44. 1 November 2014, 35% of aged 65+ were exempt, 56% of 75+ were exempt.

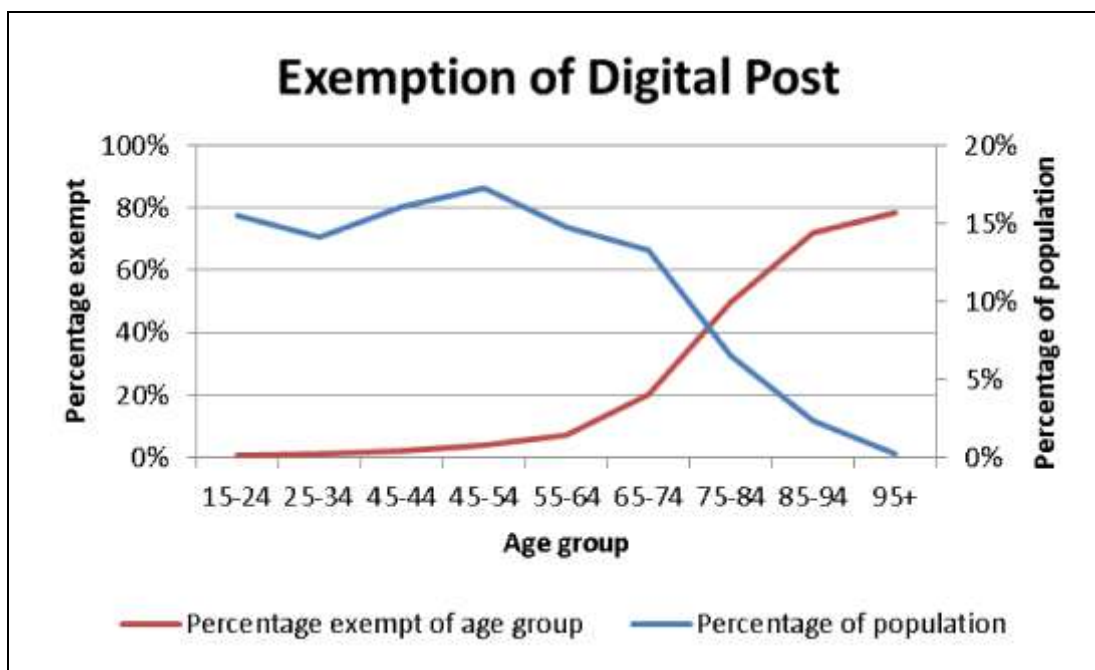


Figure 44 Age group and exemption, November 2014

In our CSTU survey, staff expressed satisfaction and relief that the exempt possibility exists, but also worry and dissatisfaction with the way the exemption process is executed. One respondent says that “the citizens that we have ‘under our wings’ are all so unable to read and understand Danish, it is an immense problem just to apply for exemption, there ought to be an easier way to avoid the digitization” and another notes that “there is a group of elderly people that fall between two stools, it ought to be easier for elderly people to be exempt from Digital Post – for instance by not having to attend personally at the town hall and sign. The many that are not able to manage Digital Post are weak elderly people that find it a burden to contact the Citizen Service Center or just to sort out the procedure for the exemption”.

During the exempt process, two municipalities declared openly that they would let citizens apply for exemption in their homes and not enforce weak and elderly citizens to attend personally at the town hall, see the press release from Rebild municipality in figure 45.

Easy to be exempt from Digital Post

The Digitization Agency has proposed that all who wish to be exempt from DP must appear in person at City Hall - or alternatively get someone else to appear for them.

- We think that is too inconvenient for citizens says the CEO

- We know that many elderly people without a computer do not have a car - and we will not force them out by bus and train to submit a form. We have therefore decided that home care workers and employees at nursing centers, health services and libraries are ready to receive the form, so the citizens who fulfill the conditions for exemption can obtain one without having to meet physically at the municipality.

The City manager stresses, however, that the digital mailbox is a good solution and a great benefit for anyone who has access to the Internet.

- It makes it easy to have the collection of his papers, to get mail faster - and it's an easy and secure way for communication between the municipality and citizens. But it is also important for us to treat the citizens well, there still needs to be a way to receive mail. The municipality is for the people, not vice versa. Accordingly, we will make it easy to be relieved without having to stand in line at City Hall, concludes the CEO, who is happy to have found a less cumbersome solution, particularly for the older group of citizens in Rebild Municipality.

(English translation)



Figure 45 Rebild municipality defies procedures of exemption to Digital Post

Some citizens also find the exemption process unworthy and that it should have been voluntary for the elderly.

If you are elderly and have managed yourself and your affairs through a long life, and still are able to do so, but cannot / do not want to do it digitally, it would be undignified and disempowering to force the elderly (or a younger person, for that matter) to let others sort things out for them. This is partly, why the elderly are applying for exemption. Dignity and deliberation counts - according to me - much more than economics (citizen).

6.5 Organizational and institutional forces

6.5.1 Joint-up government

The study revealed that there were many barriers to DP from the collaboration with other public institutions. One of the first barriers that was discovered originated from an arrangement between the local government and the county. The citizen must appoint a new GP when he files a change of address. For different reasons the choice of GP may be omitted by the citizen. The county has the responsibility of health and the local government of registering addresses. Local governments receive every week an envelope from the county with physical letters to citizens that have not registered a new GP. Staff at the local governments put every individual letter in an envelope, send them and pay the postal cost. This process was revealed at the beginning of 2012 in CCS2 and accounted for one quarter of the physical letters from the citizen register team. The letters could easily have been sent through DP from the county but neither the local government nor the county made an effort to remove this barrier, even though it was addressed.

Citizens on a retirement pension may apply for reduced media tax. The national broadcast company requires the physical application be stamped and signed by local governments to confirm that the citizen is applicable. This was also addressed early 2012 but was still going on at the end of 2013.

During the CCS study, staff reported many physical letters from other public institutions and from other departments in the local government that should be forwarded, however staff did not spend time scanning these letters, thus, they were not sent as DP.

Further, staff reports that a priest refused to receive DP regarding marriage and funeral; generally, the police and the courts also refuse to receive DP (ACS1, CCS2). Especially the courts have had their own interpretation of the validity of DP. During the NDP study, one court stated that “a law has not yet been issued that Danish courts should apply Digital Post”. A citizen that was a lay judge reported in 2012 that he had asked the court, which he was assigned to, to send his call letters through DP because he had many business trips but was told by the administrative judge that it was not legal for the court to send personal sensitive information through DP, which is absolutely not true, on the contrary.

The Tax Agency had not used DP until 2014. The Tax Agency uses regular e-mail (which is free of charge for the institution). Citizens are often exposed to phishing⁶ that resemble e-mails from the Tax Agency. The Tax Agency was encouraged by the Council of Digital Security⁷ to help citizens avoid the risk of phishing by only communicating through DP (Møllerhøj, 2014). It would be easier for citizens to distinguish phishing e-mails from real messages from the Tax Agency if citizens knew that messages from the Tax Agency only came through DP. The Tax Agency answered that they would begin to use DP but only to citizens that requested it (Boye, 2014).

6.5.2 Political level

In 2009, The Ministry of Finance and LGDK agreed that citizens should be able to contact all public institutions through DP from 1 November 2010, i.e. all public institution should be registered with a digital postbox in DP. The Danish e-government strategy states that 80% of communication should be digitized by 2015 (The Danish Government et al., 2011). The Public Digital Post Law from 2012 states that a digital post had the same legal status as physical mail from 2012 and that all citizens should be registered in DP in 2014. The Legal Notice from the Ministry of Finance in 2013 states that citizens were obliged to receive digital communication from public institutions despite citizens' preferences to communicate through phone, e-mail etc. and that citizens – on the other hand – could not demand to have digital communication but had to accept that public institutions use various communication channels.

⁶ Phishing occurs when someone sends an e-mail to citizens pretending to be a reliable organization, for instance a tax agency, and asks people to return personal data (for instance logon and password to online banking)

⁷ Private organization of digital security experts with the aim of raising awareness about digital security

- Will the Minister comment on the results of Roskilde and Aalborg Universities recent survey of municipal and State digital readiness, which was mentioned in *dknyt.dk* June 27, 2013 under the headline: State and local governments backward with Digital Post?
- Does the Minister find it satisfactory that only two out of ten requests for public authorities via Digital Post will be answered as documented in a study conducted by Roskilde University and Aalborg University?
- Does the Minister find that it is consistent with the government's IT strategy that according to Version 2.1, November 2013 that 36 public authorities have still not yet created Digital Postbox, 3 years after the deadline, and how will the Minister ensure that the relevant authorities as soon as possible use Digital Post?
- Will the Minister say what the Minister is specifically going to do to ensure that all State institutions meet the requirement to establish a digital postbox, and when can citizens and businesses expect that all State institutions are able to receive correspondence via a Digital Postbox?

**Figure 46 Questions to the Ministry of Finance regarding Digital Post
(The Danish Minister of Finance, 2013a, 2013b, 2013c, 2013d)**

The NPD study was intended to stimulate public discussion about the enactment of DP and the e-government strategy as such. We published the results from the investigation in three press releases with link to the corresponding working papers from June to November 2013. The first focused on the missing responses from municipalities, counties and State departments and the dysfunctions of DP postbox hierarchies and answering formats (Berger & Andersen, 2013b, 2013f). Of the 20 ministries, two State departments had no digital postbox, and none of the remaining 18 ministries answered our DP. Our press release created headlines as “Digital silence in public sector” (Kjær, 2013) and “The state fails with a crash: No one answers digital post” (Kildebogaard, 2013c). The same day that we sent out the press release, a Parliament member from the opposition asked the Minister of Finance to comment on the results of the study (The Danish Minister of Finance, 2013d). The Minister answered that it was not okay that public institutions did not answer their DP and that he would investigate the matter (Ibid.).

The second report and press release focused on the very low responsiveness from state agencies (one out of 5 answered), the 46 public institutions that had not established a digital postbox and the postboxes of “dead” public institutions (Berger & Andersen, 2013c, 2013g). We recommended that citizens did not use DP to write to public institutions because citizens would never get an answer (Dilling, 2013a). The media checked our data and found that there had been updates in the DP address book and that a number of public institutions had established a DP postbox, thus the number had dropped from 46 to 36. The media asked whether public institutions were not obliged to be digitally contactable when citizens were forced to receive digital post from public sector (Fribo, 2013e). The Minister of Finance was asked these questions in Parliament. The Minister of Finance apologized in parliament (Sandal, 2013) and stated that a two to three days response time would be appropriate for digital answers. Further questions were posed by members of Parliament, for instance whether the Minister of Finance found that it was consistent with the e-government strategy that many public institutions were not registered in DP and what he would do about it. First, the minister stated that “authorities have since 2010 been able to *offer* [my italiazion] Public Digital Post as a contact channel for citizens and businesses” (The Danish Minister of Finance, 2013a), but “[t]here is no legal requirement that authorities receive Digital Post from citizens and businesses. It is therefore each authority's own responsibility to assess whether they will offer Digital Post as a contact channel for communications from citizens and businesses or not” (The Danish Minister of Finance, 2013b). Second, the Minister assured that “all public authorities have (...) had created a digital postbox per. November 1, 2013. This implies that the authorities are ready to receive DP from other authorities.” (The Danish Minister of Finance, 2013b). The Minister highlights that every public institution has a DP for other public institutions even though this is not what the question deals

with. The question deals with public institutions provision of DP to citizens and companies and *not* to other public institutions.

In October 2013, a Danish Member of the EU Parliament proclaimed that “duties without rights have no place in Denmark” and “as citizen, it ought to be an option to receive all the mail from public sector in *one* postbox” (Aastrøm & Thomsen, 2013). They refer to the fact that the citizen is obliged to receive DP from public institutions but have no right to demand digital communication from public institutions or that all public institutions use the same digital channel (DP), for instance that the Tax Agency communicates by regular e-mail and others (the church, the police, the courts) by physical letters.

The Minister declared that it was not relevant for *all* public institutions to answer digital post from citizens (Fribo, 2013a; Kildebogaard, 2013a) and that the Digitization Agency would publish a list of public institutions that were obliged to provide a digital postbox. The list was published in February 2014. Even in April 2014, not all institutions on the list had registered a digital postbox (Fribo, 2014e) and though all institutions were registered in November 2014, some institutions were only registered but had not applied a digital postbox (e.g. the Tax Agency), which appears an omission.

The third paper focused on the causes for not answering DP (Berger & Andersen, 2013a). This concerned the lack of knowledge about DP and the lack of readiness to handle DP in public institutions, especially State departments and State agencies. It also focused on the prevalent existence of technical barriers to DP, perceived by civil servants. The media wrote about the public institutions that were not ready for DP (e.g. Dilling, 2013b).

This paper also focused on the application of DP in the judicial area. None of the fourteen police entities had answered and only three of twenty nine courts had answered. Most of these public institutions were surprised that they could even be contacted by DP. There were no specific public political reactions to this information.

In February 2014, the authors evaluated the DP business case and sent out a press release stating that “[m]ore than DKK 100 Million gone with the mail”, covering both local government, counties and State agencies (Berger & Andersen, 2014). There were no public political reactions.

The values spokesperson of the right wing party that had not voted in favor of the Public Digital Post Law proclaimed in her Constitution Day speech that “there may be many reasons for citizens not being able to use the Internet and nobody must be forced [to use Digital Post]” (Bergsagel, 2014; Kjærsgaard, 2014c). She proclaimed that the Danish Folkparty would propose in Parliament that DP be voluntary. Moreover, she was very upset that citizens may be imprisoned if they cheat with the exemption application (referring to the application text). The IT speaker for the leading government Social Democratic party commented on the rhetoric from Danish Folk Party (Gaardsted, 2014) and commented about the Danish Folkparty that the ethics speaker “underestimates the elderly. Some are very capable of IT – others are not. But regardless of IT capabilities, the elderly are well prepared for 1 November [mandatory DP day]” and “when we digitize the public sector, we reduce costs by millions that can be spent on public welfare, which is why we must include as many as possible and, why it’s not voluntary”.

Our NDP study revealed that in certain situations, DP displays a wrong public institutions sender. After it was published that the Ombudsman had stated that DP probably violates the Danish Administration Law due to uncertainty about the sender of the digital post (Sørensen, 2014), the values spokesperson issued a press release, which pointed to the uncertainty of public institution identification in DP and other issues that had arisen and urged the government to

postpone the automatic registration of citizens in DP; “they [the government] have been in a real hurry. Denmark had to be one of the first countries in the world that launched digital communication. Why this haste? (...) As it is right now, I fear that one case after another, where citizens suffer because the public sector cannot manage Digital Post.” (Kjærsgaard, 2014b).

A very typical reaction to digitization from politicians came from the Minister of Tax as a comment to the media statement that the Tax Agency when communicating with citizens should utilize the security of DP instead of e-mail to prevent citizens from being subject to disclosure of sensitive data related to phishing⁶. The Minister stated “I will not go into a technical assessment of whether it’s a good or bad idea to send e-mails to citizens. That is a matter for the IT people in the Tax Agency” (Boye, 2014).

6.5.3 Administrative level

The institutional forces have been measured in many ways during this study. From the internal treatment in the CCS, ACS and AJC cases to institutional reactions from 125 public institutions in the NDP study and overall reactions due to the media coverage of the NDP study from the Digitization Agency and LGDK.

The beliefs that drive the e-government strategy

The Digitization Agency under different names has had the operational responsibility of the different e-government strategies throughout the last 20 years and the now General Director, Lars Frelle, has had a major influence in the entire period. He commented on the current e-government strategy at the opening of the yearly Digitization Convention⁸. According to the General Director of the Digitization Agency (Frelle, 2011, 2012), the new e-government strategy would entail a deep change process. Citizens should be prepared to serve themselves, the service level from public sector would be reduced, and the course would be firm after the slogan that “those that can, must”. “We will commit citizens to be digital – by legislation, not many have discovered it yet, but they will in 2014”. “At first, it is the administrative domain, but afterwards, it will be the social, the health and educational domains that will be in for it”. The background was the deep economic crises, “there is a national deficit of DDK 85 Billion – there is no money!” and “there will soon be a shortage of work force”. He claimed that “we don’t love e-government, but there is money in this area, huge costs reductions”. While the citizens are not very keen on using the e-services, “we will use legislation as a game-changer”. The digital citizen self-service would be driven by legislation and as he stated about the elderly, “they are so law abiding, that if they are told that it is decided by law, they will do it”.

He also had comments for the digitization in the local governments, namely that “work processes are generally not digitized and that local governments have not been doing the job. Local governments will learn that it is serious. If they don’t begin the digitization process in the back-office, we have to find others that can do the job.” With the last statement, he hinted at the new national public institution Payment Denmark (see sections 2.1, p. 11 and 6.3.1, p. 119), the institution that took over major areas from the local governments). He stated that the Digitization Agency knew that around 20% of the population would not be ready for the digitization, however “they will be assisted at the local governments’ citizens’ service centers” and “we will rely on new and more accessible technologies as iPads”. The most important is “how citizens are received in the service centers and that they are taught to be digital”.

⁸ The Digitization Convention gathers around 1500 people from the Danish e-government field: Politicians and administrators from public sector, consultants and technology vendors to meet and discuss current challenges and future trends.

In the 2013 opening speech, the General Director referred to the responsiveness study included in this PhD-study (NDP) and commented that it was not satisfying that only half of the municipalities had answered the digital post from the researchers (Frelle, 2013) and that it had to be ensured that local governments got the back-office processes and configurations in place. He also commented that the system vendors were not yet ready to integrate to DP. I was interviewed together with the General Director in a radio program titled: “Is it too much with the digitization?” (DR P4, 2013). Citizens called and revealed that they were not opposed to digitization but that it just didn’t work due to technical problems, bad design, lack of integration between systems, insufficient information etc. I asked the General Director if there was a need for an institution, where citizens could complain about poorly functioning e-government. The General Director answered “no, the existing possibilities for complaining are sufficient, we must not make the digitization anything special”.

The chair of LDGK offered these comments to the e-government strategy at the opening of the convention in 2012 (Bundsgaard, 2012), namely that “the nation has seen the worst economic crisis ever, there is a genuine ‘burning platform’, the digitization constitutes a huge potential that we are forced to utilize. Digitization is one of the greatest change drivers that we need to apply to free the resources that are necessary to be able to deliver the services that citizens demand”.

The General Director has underpinned the success of DP due to the millions of transactions every day and that delegations from around the world visit Denmark to learn about this (Fribo, 2013b). The Digitization Agency has conducted competitions, where local governments competed on getting most citizens to sign up for DP, followed by immense social media and media coverage. The competitions were based on the poor numbers of citizens that had registered for DP for all local government.

When the NDP study revealed that none of the State departments answered the digital post that we had sent as a citizen, the Digitization Agency claimed that the missing answers were not due to technical issues (Kildebogaard, 2013b). In our internal contact with the Digitization Agency, they suggested that an error from the State IT Agency (that supported the majority of the State departments) could be the reason. The low responsiveness of State agencies revealed that ignorance of DP was found in the vast majority of institutions. The media wrote ‘Public institutions: Digital post, what is that?’ (Elkjær, 2013). The Ministry of Finance arranged a troubleshooting meeting with system vendors to discuss and improve technical issues. The ministry also sent manuals to public institutions. The Digitization Agency and LGDK arranged workshops with State institutions and municipalities with references to the NDP study (The Danish Digitization Agency, 2013b), where public institutions could learn how to operate and setup DP to avoid failure. The workshop slides from the Digitization Agency and LGDK state that “the Digital Post solution is relative complex and therefore difficult to understand” (Sommer & Møller, 2013). The Digitization Agency promised to ensure that all public institutions would be able to answer DP (Dilling, 2013a).

In October 2013, EasyID was down for three days due to Java update problems, which meant that citizens could not access DP and did not know for how long. The Digitization Agency only reacted after two days because a journalist asked what people should do about it. The Agency had no emergency plan or alternative access and only had the totally misleading answer that “municipalities can always send a physical letter” (Fribo, 2013c).

When our study revealed that historic digital posts were not static but that the sending/receiving institution name could be changed by the institution, the Digitization Agency explained that “this is no error, but a feature that should help citizens to navigate the many authorities who often change the name and are merged” (Fribo, 2013d), they claimed that this

was a “new function” and that citizens always could track the public institution via the CVR⁹ of the public institution. Comments from citizens in the media revealed, however, that this “new function” had been a feature in e-Boks long before DP, contradicting that it was all new. Further, the CVR is not stated in the DP, thus the documentation of the sender of a message would not be easy to find for citizens.

We presented our results at an open meeting at Aalborg University. The Digitization Agency participated and claimed that we could not prove that the changes in recipient/sender name of digital post was illegal. They were not concerned about how this feature deviated from the retention of a physical letter or an ordinary e-mail or how this could create mistrust by citizens. The media raised the case and in three days it led to many comments from citizens, a vast majority expressing disbelief, and worry; clear signs of mistrust (Fribo, 2013d, see comments). One commentator claims that it is a known challenge that you need to deal with organizational changes (mergers and divisions) and the question is to preserve the history or overwrite it. He states that “there are advantages and disadvantages related to every solution (...), but the most stupid thing is to not relate to the consequences” (Ibid. comment 26. November, 2013 - 10:27). The Danish Ombudsman chose to investigate the case but judged that it was not illegal since it was only metadata and not the content of the message that could be changed, he noted that this did not mean that he found the solution appropriate (Fribo, 2014b).

We prepared to evaluate the DP business case for 2013 in the beginning of 2013. As mentioned in section 6.3.1, p. 119, we needed an approval from the Digitization Agency to retrieve the postal costs. The Digitization Agency did not find that it was their business and the data was never retrieved. One big municipality supported our evaluation and thanked us for focussing on the “overly optimistic business case”. The Ministry of Finance replied that there was a deficit but they did not know the exact figure (Fribo, 2014d). They did not call it a deficit, however, but a time lag due to a delay in the implementation of DP. Even though, the Ministry of Finance confirmed our findings, LGDK issued a press release questioning our method and claimed that we had not included all data. During the elaboration of the evaluation, we had frequently contact with the DP department in the Digitization Agency to verify our interpretation of data. We found that local governments had sent 8 Million digital posts, where the estimate of the Ministry of Finance was 18 Million. The DP department claimed that the 10 Million pay specifications to employees also should be included. However, the agreement between the Ministry of Finance and LGDK explicitly states that the reduction of State funding is grounded in cost reductions from the Public Digital Post Law, which only addresses communication between public institutions and citizens/companies and not (which may be self-evident) internal messages from public employers to employees. After the dispute about calculation methods, The LGDK denied that there was a deficit (Ritzau, 2014a), but agreed the next day that they did not know the figures, that they did not intend to evaluate the business case and municipalities should not expect to be refunded if there was a deficit (Fribo, 2014a). In March 2014, the authors were summoned to a meeting with the General Director of the Danish Digitization Agency to explain our findings. After the presentation of our findings and the method used, the agency admitted a deficit from DP as calculated by the authors, but still insisted that it was only a time lag.

As a reaction to the evaluation of the DP business case and directly addressed to the researchers behind the evaluation, LGDK issued a press release stating that the researchers had “forgotten the goal and importance of other efforts” (Færch, 2014). LDGK argued that “all municipalities work hard to optimize use of Digital Post” because DP is a “good means to deliver modern service to citizens and efficiency of internal work processes”, the “success of doing things

⁹ The CVR (central company registry number) for companies has the same function as the CPR for persons

smarter does not depend on how many digital posts are sent” and “the great effort is beginning to bear fruit and that is where we should have our focus”.

We contacted LGDK and offered collaboration so that next time we would evaluate the DP business case for 2014, we would not disagree about the method and further, we recommended that LGDK supported us getting postal costs data to be able to elaborate more precisely the business case. LGDK did not want to support this approach and would not give access to their local governments’ network to facilitate approval from particular local governments.

A reluctance to face or disclose negative results was experienced in the CCS2 study. After finishing the study at the end of 2012, the author forwarded the results to the CEO, namely the discovered barriers to DP use, the extent of circumvention of DP and the overall (low) DP percentage of all outgoing communication. Further, the author had drafted a joint newspaper article presenting results and the initiatives that the municipality had initiated to mitigate the low use of DP. The CEO was very upset by this and the author was summoned to an evaluation meeting. To my knowledge, the results were not disseminated internally for learning until a year after on behalf of the CIO and only indirectly as consulting advice.

In the NDP study, none of the fourteen police entities had answered and only three of thirty courts had answered. We had a complaint from a chief of police about the research model - sent as a physical letter. We also had a call from a very upset managing judge because we had claimed that his court had not answered our digital post – he *had* not, but he did not know. It was clear from our study that managers, employees from IT-departments and academic staff tended to find missing answers of digital post related to human errors at the operating end or errors at the ‘citizen’-end, whereas operating employees clearly were struggling with lack of information, complexity and technical challenges. Some institutions explained that they had not answered the digital post because they thought it was spam due to the ‘silly’ questions of address and opening hour. This was easily mitigated by the fact that 80% of public institutions answered the same questions when they arrived in an e-mail. The Danish Courts Agency replied on behalf of all the courts giving exactly the spam-explanation for, why the vast majority of courts had not answered – however 23 of 26 courts had answered the same questions by e-mail. Furthermore, we received another explanation from one of the courts, namely that the missing answer was due to lack of information from the Danish Courts Agency.

In CCS there was generally very weak support for DP from the heads of departments and even resistance was found amongst managers. In AJC, I found the same barriers to DP as were earlier found in CCS and ACC, furthermore the weak support from managers and from CEO was also found. The management committee of AJC evaluated the DP effort after four months. They explained the poor usage of DP partly, by lack of support by the central IT department and the CIO and partly, by the fact that their priority during the work day was to live up to the demands from the Ministry of Employment and not to implement IT projects.

Operational level

The NDP study revealed different attitudes from civil servants towards responsiveness (Berger & Andersen, 2013a). Of the many public institutions that we had contact with during this study, there were many employees that showed great effort in serving ‘the citizen’ and help us with ‘the collection of the package’. Employees searched for the package, they proposed different ways to retrieve the package and ‘the citizen’ was contacted by phone by many employees to be clear about what package it was. One employee even called Saturday afternoon because he had not been able to reach ‘the citizen’ during the weekdays. Secondly, many public institutions contacted us when they received our e-mail telling them that they had participated in an experiment and that they had not answered the digital post. Most of these public institu-

tions were surprised that they even could be contacted by DP. We were contacted by one police district, who wanted us to participate in a national cross-police meeting and explain what DP was and how they could manage it. We were contacted by institutions that wanted us to re-send the digital post because they had deleted it and they wanted to see how it looked. Some public institutions elaborated and distributed guides that explained how the digital post looked like and how it should be operated. And we were thanked by many institutions because we had helped them manage DP, for instance “The possibility to send digital post to the Civil Aviation Administration should have been removed. Thanks for the tip.” (this was one of the ‘dead’ public institutions in DP) (Danish Transport Authority) and “since your study, we have configured DP appropriately to forward all digital post to our internal systems. Hence, it should no longer happen that digital post is not answered” (Municipality of Norddjurs).

We are very conscious that we as a public authority also are a service institution and we are very happy to receive any ideas as to how we may ensure that the citizens receive a good service when they contact us digitally. Hence, we would be very pleased to receive your report. (Mid and West Jutland Police).

This is further reflected in the third of the public institutions that had not answered our digital post and are not satisfied with their own performance, “of course, it is unsatisfactory that the answer did not reach the citizen” (Tønder municipality) or “we had new computers and lost all our integration and we have not re-established Digital Post and that is why we did not answer. That is not satisfactory” (Norsøfonden).

We were contacted by the systems vendor that was responsible for two major system errors that were revealed in our working papers (a HTML code error and the inappropriate internal texts in the answer to the citizen). They told how they had corrected software errors and improved dialogue with their 50 public institution customers regarding implementation issues to avoid configuration errors as the ‘internal texts’. The vendor wondered how these errors and inconveniences could be found even after more than three years of operation.

On the other hand, more than half of the 76 public institutions that did not answer our digital post - hence, did not show responsiveness to the citizen - were satisfied with their performance. The explanations showed a clear alienation towards the digital communication through DP, for instance “under normal conditions our response time is around 14 days, which is a good service” (Ballerup municipality), and absolutely not relating to the specific incident. Further, “we have no knowledge that we receive digital post, we do not have access to digital post, we are not an independent authority but a part of the Danish Police” (Fyns Politi). One court explains that they had “sent a very full response and have documentation for the sending. Apparently, the answer has not reached the citizen, which obviously is not satisfactory, but the court is not accountable for these circumstances” (The Court of Næstved).

It is interesting to notice the explanations that public employees give to why they have not answered DP. First, a vast number of public institutions, especially State agencies and departments, did not even know what DP was, for instance “how did you send the digital post?” (Ministry for Social Affairs and Integration) or “can you inform me, which channel you have sent your digital message through?” (Danish Competition and Consumer Authority). Second, many public institutions claim they never received the digital post. It needs to be stated that during the study, it was confirmed in every instance by e-Boks that the DP was received from ‘the citizen’ and sent to the public institution. Some public institutions document their claim with screen dumps from case handling systems or Outlook and some indicate that the problem is with ‘the citizen’ - that the digital post was never sent. Some public institutions thought they had not received the digital post because they were searching for the e-mail by the author’s name or the subject, as mentioned already. Note that digital post is converted to an e-mail at the public institution end, see figure 12, p. 22.

Many public institutions claim that they did answer. Again, it is necessary to state that in every incidence it was confirmed with e-Boks that a digital post was not received by the DP system from the public institution. Some institutions suggest that it is ‘the citizen’ that has difficulties managing DP. An employee argues that “I can see that it was an encrypted e-mail and maybe, you have difficulties with that” (Court on Frederiksberg). We received documentation from several public institutions as prints from the ‘sent’ message in their Sent-folder, where the “sent”-date can be measured, see figure 47.



Figure 47 Documentation for sent answer (Court of Næstved)

Many explanations from public institutions reveal various technical challenges for the receipt and sending of DP, for instance problems with certificates, problems with handling CPR in the feeding systems, a missing ‘#’ in the subject field, the necessary DP reception code in the e-mail text was erased, the wrong send-button in Outlook was used and in one incident, the digital post was rejected by the case handling system because it was configured to only accept digital post from citizens, who were registered with an address in the municipality. Furthermore, we received HTML answers from two public institutions that could not be read.

Many institutions also report on working processes not being in place, that operating staff simply did not know what the digital post looked like or how it should be handled – one major barrier is that if it is answered as a regular e-mail from Outlook, it will not be received by the DP system. Some institutions have outsourced the technical support of DP and argue that the subcontractor is accountable for the error. Some institutions blame work pressure, new organization not being in place or new computers. Some institutions even argue that it had not yet been decided, whether the institutions should use DP – despite that they had a Digital Postbox at Citizen.dk.

Finally, some public employees thought that it was a spam mail – not due to the trivial questions (the research design, mentioned earlier), but because “employees that answer mail have not been told that e-mails from Citizen.dk/e-Boks resemble spam” (Danish Competition and Consumer Authority).

The NDP study showed that civil servants’ behavior is strongly influenced by beliefs that IT-systems cannot fail and that confidence in systems tends to reduce the personal responsibility. Further, the strong system belief may introduce a skepticism towards the citizen when some-

thing is not working, leaving the citizen with the problem and the task to ‘prove’ that she is right.

As a further institutional behavior, we found that civil servants tend to direct citizens to a website rather than assisting the citizen directly.

Institutions that have been critical of DP

Few institutions have been involved in the e-government strategy as the citizens’ watchdog. There is no general entity, where the citizen can file complaints about the digitization. However, the Ombudsman has – as mentioned – assessed whether DP complies with the law (Fribo, 2014b, 2014c; Sørensen, 2014). The Digitization Agency has agreed to align the system due to comments from the Ombudsman. 300 complaints were filed to the Council of Appeal on Health and Safety at Work due to single parents’ loss of child benefits because they were not aware they had received digital post. The Council ruled that it was not right to send digital post without notifying the citizens by a physical letter that DP would be used for the communication. They ruled that the decision of Payment Denmark to stop the payment should be reversed. This decision entails that civil servants must ensure, every time they use DP that it is not the first time that the citizen receives a message through this channel in that particular situation.

6.5.4 Imbalance

There is a feeling of imbalance amongst citizens and staff between what the State demands of the citizens and how the public sector behaves.

Citizens are required to receive DP and have the entire responsibility to be able to handle DP, which involves having the resources to buy and update a computer and printer or to be able to go physically to the library (which may entail going by bus if the citizen has no car or cannot drive). Further, the citizen needs to possess computer abilities (connecting printer to the computer, installing and maintaining software (printer driver, Java, Acrobat reader, browser, antivirus), file handling, removing unintended software installations etc. They also need to be able to read and understand digital messages and fill out forms digitally and to activate and maintain EasyID (keep track of login, password and access codes). Citizens need to, by themselves, be able to keep track on the arrival of new messages (the negative version of one-stop-shop).

On the other hand, staff find that public sector is not ready to use DP and are not able to provide the citizens with digitally signable forms. From the NDP study, we find that public institutions cannot manage to answer DP and that the State requires costs reduction above digital post cost savings, leading to a direct deficit. The necessary legislation was not ready in time; interoperability was not in place due to the software market not being ready to integrate with Digital Post. Furthermore, public employees did not have the necessary training to operate DP nor the necessary information. Content of forms are not updated to a much more rigid and isolated application process. Citizens find that public institutions are not mandated in the same way to be contactable in DP and the DP address book is not maintained and up-to-date. Further, when it is discovered that DP has grave design flaws or even supposedly violates the law, it has no consequence, the State can neglect it and are not obliged to correct the matters. The ones in power decide the economic consequences of DP, they have not made the background for the economic consequences transparent and refuse to evaluate and correct.

“They [citizens] should at least be able to fill them out [the forms], sign and return them digitally (...), this should have been in place BEFORE” (staff). “It’s not right to force the citizens to buy computer” (staff). “I think we should have had more time before it was mandatory (staff), yes, but it has been decided from above (staff)”. “We send everything digitally, but we cannot receive digitally – that’s a big flop”. “Those, that have decided the digitization, they

think that you should only tell this to people once, but many of these [weak] citizens, they need help every time and for every little detail” (staff). “Before forcing ordinary citizens who may not have much understanding of sending and receiving digital post, public institutions should have done their homework, made sure that all the necessary things were in place.” (staff).

The imbalance has also been expressed by a member of parliament.

It's really making fun of the Danes that they must receive digital post, when the public authorities cannot receive the response digitally. There are many older citizens who are not familiar with computers and IT systems - and the municipalities require that they should be digital while the public authorities that have every possible technical capabilities are not subject to the same requirements. (Kjærsgaard, 2014a)

An unequal relationship is established. I know positively (which is not good) that some public institutions clearly refuses to receive digital post. The citizen receives digital post from these institutions but must respond in old-fashioned paper form (Citizen)

6.6 Implementation strategy

Savoldelli et al. (2014) state that the lack of transparency and involvement of citizens in e-government policies and decision-making relates to the low e-government adoption rate. In a mandatory setting, citizens' satisfaction with e-government is more relevant to consider than e-government adoption (Brown et al., 2002), thus citizens' satisfaction may depend on the policies and responsiveness (the feeling of involvement) that governs the e-government implementation. In line with this assumption, Chan et al. (2010) suggest that “In situations where the facilitating conditions act as an inhibitor, individuals may adjust their attitudes negatively to be consistent with the situation” (Chan et al., 2010, p. 525). Further, Chan et al. (2010) propose that “the launch strategy of a new technology is relevant to user acceptance and satisfaction, especially when the use of technology is mandatory”. These authors especially regard the facilitating conditions as significant in a mandatory e-government setting as “users will vary in terms of the extent to which they have access to and ability to use facilitating conditions” (Chan et al., 2010, p. 525).

E-government policies may be defined as the implementation strategy that the government follows to realize the e-government initiative. This section will elaborate on the DP implementation strategy from an approach where the given complexity of the project must be matched by appropriate resources (Magruder, 2011). The DP project goal and provided resources are described in table 22 and an assessment of the DP project complexities are given in table 23.

The Digitization Agency are currently (March 2015) dealing with the challenges with DP towards public employees, the young people, the migrants and other groups that do not logon to DP.

A Facebook group has been established for practitioners to share experiences about DP¹⁰.

Activities towards young people constitute a special effort through social media to remind young people that they get mail from public sector in DP and that they need to register e-mail and mobile number to receive DP alerts. Further, information has been developed, for instance post cards, posters, web material, movies etc. targeted young people and for local government to freely use.

The Digitization Agency will analyze data about citizens that have not logged onto DP to generate more knowledge about which channels may be best used to contact these citizens and how they can be helped. This might be through health care employees, relatives or a network.

¹⁰ facebook.com/startpaanettet.

A national campaign to maintain citizens' awareness of DP and the possibilities of getting help at Citizen Service Centers and libraries together with aid from NGOs will be conducted.

Information about DP will be distributed in different languages, amongst others Somali, Farsi and Arabic. The Digitization Agency is in contact with NGOs and public institutions that represent citizens with special needs. The Agency will conduct workshops with around 50 NGOs with the aim of getting feedback on how the Agency should address citizens that do not logon to DP. Amongst the NGOs are organizations for migrants, people with disabilities, those with mental illness and the elderly.

Table 22 Digital Post project goals and provided resources

Attribute	Description
The goal	80% of written communication between public institutions and citizens should be digitized
The DP concept	Public institutions may send digital post to citizens. Public institutions may apply whatever communication channel they will. State funding to public institutions are reduced beforehand according to anticipated cost reduction. Citizens are automatically registered in DP. Citizens bear the legal consequences of not accessing digital post (e.g. potential economic consequences). Citizens cannot demand public institutions to send digital post. Citizens can be exempt for two years if they don't have a computer and Internet access. They must apply at town hall.
Responsibilities	Government implements and operates the national infrastructure (DP, EasyID, Citizen.dk etc.) and offers it to public institutions and citizens. Public institutions implement and operate the necessary infrastructure to connect to DP. Local governments assist the citizens with DP in the Citizen Centers. Local governments must offer access to computers with Internet access (e.g. at libraries). Citizens bear the economic costs of operating and maintaining computer with Internet connection.
Components	The DP project has three components: 1) To establish the national infrastructure, 2) to establish the local public institutional infrastructure, 3) to establish the citizen infrastructure.
Project organization	The three projects run independently, no overall coordination, no measurements of progress,
Project control	No overall project owner, no overall steering committee with power across public sector
Delivery organization	The Digitization Agency (The Ministry of Finance) with limited resources to manage the national infrastructure, limited resources to support public institutions. LGDK assists the local governments, but with limited powers
Overall project management office	None
Stakeholder responsiveness	Software vendors: some (from the Digitization Agency), citizens: (little), public institutions (little)

Table 23 Attributes of complexity

Attribute	The overall program	Digitization Agency	Local governments	Citizen
Time (rigid/flexible, tight/lose)	2006 – 2014	2006 - 2010	2010 - 2015, sufficient time, but they only started in 2012	June 2012 – November, rigid
Scope (broad/narrow)	Broad, 2-300 public, institutions in various domains and with different levels of readiness, 4.7 Million citizens, 600.000 companies	Broad, 2-300 public, institutions in various domains and with different levels of readiness	Broad, most administrative processes are affected, all administrative, IT departments, academic staff and managerial staff affected	Narrow for citizens that have little contact with public sector, broad for citizens with huge contact
Goals (unclear/clear, unstable/stable)	Clear, stable. Decided by Parliament	Clear, stable	Unclear/unstable. Many particular situations must be considered while implementing	Clear, stable
Communication processes (not efficient/efficient)	Not efficient. Only part of needed information was communicated to public institutions and citizens	Monthly meetings with 50+ project managers from 50+ institutions, meeting with vendors,	Local governments have 40+ functional areas and limited project managerial resources	
Sponsors (no direction/direction)	No overall sponsor	Yes, direction	Typically no	
Technical requirements (high/low, existent/non-existent)		Medium high/medium existent	High/not existent	High. Existent for some citizens and non-existent for others
Team location (physical divided/together)		Together	Divided	
Team expertise (all necessary skills available)		Yes	No	
Team availability, conflicting priorities		Yes/no	Dependent/yes	-/yes
Delivery partners, vendors?	Yes. All technology development outsourced and availability of solutions driven by the market, i.e. program not in control of technology delivery	Yes, but developing tasks will be attractive for vendors, thus high responsiveness	Yes. Developing tasks will not be attractive for vendors due to too many small customers at the same time	Yes. Must rely on relatives or commercial vendors, costly
Unforeseen consequences	The challenges with dependencies from 3 rd party software. Legal barriers. Lack of cooperation with major public stakeholders (Tax, Justice)		Lost ability to assist citizens	Lost sharability, lost assistance from public employees
External dependencies	Legal issues (Parliament)		System vendors to develop integration to DP. Other public institutions to accept DP	Computer maintenance, EasyID, Java, OS, browser etc.
Technology follows standards?	No	No	No standards exists for the many systems	Some
Technology maturity (low/high)	Low, has not been tried before	Low	Low	Medium low

6.7 Enacted Digital Post

Fountain (2001) attributes the enacted technology to uncertain and potentially but unintentional negative outcomes. Table 24 summarizes the attributes from the enacted DP that was found in this study, the list is not exhaustive. These attributes are derived from various decisions that need to be taken when the objective technology is embedded in the real and messy world and become enacted technology. Other design, configuration and policy choices would have given other outcomes from DP.

Table 24 Attributes of the enacted Digital Post

Attribute	Description
Uncertainty about DP and e-Boks	By allowing the private company e-Boks to disclose the same messages from public institutions that can be accessed in DP, the Digitization Agency makes it difficult for citizens (and staff) to figure out the differences and whether one should engage with one or the other system – or both, to be sure to comply to the responsibility to access all the messages from public sector.
Change of sender/recipient	Public institutions could change their displayed name in DP messages with no time control, i.e. corrections apply for historic messages. Historical messages in the citizens' DP to and from a particular institution would without notice change sender/recipient. The Digitization Agency claimed it to be a new feature to assist citizens track public institutions that changed names. This may seriously impinge mistrust, when presumably static 'letters' can be 'tampered' with.
Failure to identify sender/recipient	When citizens sends a digital post to a public institution at a 'subordinate-level' (e.g. a court under the Danish Courts), the recipient would figure as 'Danish Courts', which may create confusion and citizens might not discover the message if they are waiting for a message from another institution. The design of DP was only meant for institutions with a CVR, the intention was not to create entries for subordinate institutions.
No time stamp	The DP system does not display a time stamp for the received or sent message which is due to system updates are scheduled as batches and not dynamic updates. This deviates from expectations from an e-mail system.
Uncertainty of confidentiality, disturbed communication	When the citizen receives a DP answer from a public institution, the answer resembles an e-mail and apparently it has been 'tampered with' because it not looks exactly as it would if it had been a regular e-mail, certain fields, subject, name of citizen, name of recipient are different. Further, the DP answer may have a number of irrelevant attachments. This may hamper communication and create mistrust.
Difficult to locate for staff	A digital post received in the e-mail system resembles an e-mail, but is different in crucial ways, for instance name of sender is not the citizen and subject of the e-mail is not the subject given by the citizen. Staff cannot search on citizen name or subject. Further, the e-mail may be 'wrapped' in a secure e-mail. This is due to e-mail systems not being designed to receive DP.
Dependency on third party software	DP can only be accessed through EasyID. EasyID was for 3,5 years based on Java, that should be regularly updated through dialogue boxes in English. With regular Java updates, citizens might install the Ask toolbar by default, which is very complicated to get rid of. Windows XP users had to change OS when stopped supporting Java. Citizens using Google Chrome should change configuration to not view PDFs through Chrome's PDF viewer, which is not compatible with Adobe Acrobat Reader, which DP is based on. By repeated update of Acrobat Reader, citizens may by default risk nstalling MacAfee.
Lack of assistance	DP is dependent on EasyID that is designed with the sensitive personal CPR code as login. This entails that public employees may not access the computer with the citizen, which reduces the degree of assistance
Lack of sharability No forwarding to e-mail No alternative DP login Dependent on output managers	DP lacks the sharability of a physical letter due to the digital media and the security measures. The messages cannot be forwarded to a regular non-secure e-mail account because of security issues DP can only be accessed by EasyID. When EasyID is down, citizens cannot comply with DP rules Public institutions must in their work processes or through their systems distinguish between citizens that receive DP and those that receive a physical letter. This must be performed by every work process in every institution. It would have been much less complex and much more efficient to include the output manager functionality in the DP system
No total flow control	Since the entire communication flow from public institution to the citizen is distributed to several system types in several organizations, no one has the overview, which is crucial when errors occur, especially when it's the citizen that has the legal obligation
No training environment for staff	Staff must adapt to the systems without having had training that reflects the real environment, staff have no ability to experience DP from the citizens view, if they don't use their own private CPR as test
Answering functionality not configured Digital forms cannot be answered digitally The DP business model	Public institutions have been slow to configure DP so that citizens can answer back, which should be expected of a communication system. Citizen must print and scan or send answers For four years, public institutions sent PDF forms that could not be filled out and sent back digitally. Citizens had to print, fill out, scan or mail back Public institutions pay per DP transaction, while regular e-mail is free, which imposes a dilemma. Transaction fees should have been paid centrally
Citizens must be on-line DP not for death citizen	Citizens are obliged to be check DP regularly, which is troublesome for citizens without a computer When a citizen dies, the DP is not accessible; however public institutions can send messages to dead citizens. This is inconvenient for relatives and local governments that have to administer the estate of the deceased person
Computer capabilities	Citizens need to be able to operate and maintain computer hard- and software, including keyboard, mouse, printer, OS etc.

DISCUSSION

7.1	Implications for practice	155
7.1.1	Impact on citizens.....	157
7.1.2	Impact on public employees.....	158
7.1.3	Impact on organizations	160
7.1.4	Impact on public sector ethos	161
7.1.5	Negative impacts follow from a flawed implementation	162
7.1.6	How could the negative impact from Digital Post have been avoided?	163
7.1.7	E-government harm is mitigated by a responsible e-government ethics	164
7.2	Implications for research.....	170
7.2.1	Deficiencies in existent e-government research	171
7.2.2	E-government harm ontology.....	171
7.2.3	E-government harm epistemology.....	172
7.2.4	E-government ethics and maintenance	174
7.2.5	Coercive e-government changes the rules of the game	175
7.3	Limitations	178
7.4	Future work.....	179
7.4.1	Certified Mail Systems in e-government.....	179
7.4.2	Easy to use eID.....	179
7.4.3	The reasons for local government DP differences.....	179
7.4.4	The citizen´ right to own data.....	179

7 Discussion

The discussion focuses on implications for practice and implications for research.

7.1 Implications for practice

One significant result from this study is the degree to which the enacted DP technology deviates from the objective DP technology. This is important because the e-government field and the ruling discourse solely perceive and treat DP as the objective technology. All the unintentional and unanticipated impacts from DP, thus, attribute to the enacted technology. Due to space requirements, it has not been possible to disseminate this complexity in the published research, except from the working papers in Danish (Berger & Andersen, 2013a, 2013b, 2013c).

Objective technology enters from outside the organizational context, is embedded in the organizational context and becomes the enacted technology (Fountain, 2001). The objective DP is the DP technology that the vendor (e-Boks) or the Ministry of Finance promotes as only having positive impact, for instance that citizens can always find their letters from public sector, that citizens can write securely to public institutions and that citizens can easily find and write to all public institutions. Towards public institutions, DP is claimed to reduce postal costs and operating time. This view, however, comprises a convenient but too limited view since the DP technology cannot operate independently. To be able to perform digital communication between public sector and citizen with DP, it is necessary to include the entire chain between the citizen with computer and Internet to the public employee with output manager, Outlook and subject matter systems. Hence, the entire DP e-government architecture as depicted in figure 2 (inspired by Ebrahim & Irani, 2005) needs to be included to be able to assess the enacted technology.

The citizen needs to maintain the computer with an updated browser, updated Java, configured browser to display PDFs with Acrobat Reader and not internal browser PDF-viewer, functioning LAN or WIFI amongst other things and must have acquired, installed and configured Internet access.

To be able to access DP, the citizen needs to access Citizen.dk and locate the DP entry, which is followed by the EasyID logon using CPR/password/access code from a chart or from a token. DP should be synchronized with e-Boks so citizens do not risk two similar views with *different* data. DP should also be configured to send alerts by text and e-mail; phone number and e-mail address should be confirmed. A phone that can receive texts and e-mail may also be appropriate for digital communication by DP.

The various public institutions have configured their digital postboxes and the way they operate according to different logics. Furthermore, answers from public institutions vary immensely according to configuration and technical capabilities of the given public institution (error in integrated graphics, irrelevant attachments, disturbing internal messages, disturbing spam-like codes etc.). An answer from public institutions is presented in DP as if the citizen had sent an e-mail to begin with. The 'e-mail' (a digital post in disguise) is composed from mixed components of citizen provided content and system provided content, which gives the impression that the 'e-mail' has been manipulated by the system - which again might entail citizen mistrust. Moreover, the study has shown that names of the public institution as sender/recipient on historic digital posts may be changed by the public institution and that digital posts from underlying public institutions are displayed with incorrect sender/recipient. This may be disturbing when receiving a text or an e-mail alert at the arrival of a new digital post since it only displays the name of the 'wrong' public institution and no further message to inform about the content

of the digital post. DP does not provide the citizen with a receipt when the digital post is received by the public institution, which entails uncertainty with citizens in some situations.

The public employee can receive digital posts in various ways depending, in part, on the configuration of and integration with DP and, in part, upon which particular system constitutes the front end. If the public institution displays the digital post through a case handling system, the system may have translated the digital post meta data to display further information to guide staff (for instance, the name and CPR of the citizen, and the subject of the digital post). If the digital post is displayed in Outlook, this information is not displayed in the overview; hence, staff may have difficulties locating a particular digital post. When answering digital post, this may be done through the case handling system or through Outlook as an e-mail. Staff must be aware that answers must be sent as secure e-mail, which requires different procedures than sending a regular e-mail. The secure e-mail procedures will vary with the secure e-mail system and local configuration. When staff initiate a digital post to the citizen, it is most effectively done through the output manager system because staff don't need to distinguish between citizens that are registered in DP and citizens that are exempt who must receive physical letters. There are at least two output manager systems and some public institution use both, for different purposes or in different departments. If a time constraint on the communication is imposed, for instance by regulation, staff must manually ensure that citizens with and without DP have access to the communications at the same time. The vast majority of digital posts to citizens are cover letters to attachments from application systems. The various application systems are integrated with the output manager systems (hence to DP) to a varying degree and in different ways from no integration at all (the system can only print physical letters, thus does not support DP at all) to full integration that entails no further work processes for staff (see figure 14). The public institution receives no receipt, when the citizen accesses the digital post. Documentation for sent digital post may be located in different ways within different sending systems with great difficulty (for instance in log files).

The entire EA chain of Digital Post communication is multivariate and may be configured in different ways and the enacted Digital Post technology is very different from the objective Digital Post technology. However, to only include the technology is also too limited. The enacted technology provides different positive and negative affordances than the objective technology, hence different outcomes (Fountain, 2001). The technology is perceived differently by different actors in different situations and amongst others, depending on knowledge, motivation, skills, message content and contextual factors (Spitzberg, 2006). The results of this study show that both staff and citizens have difficulties coping with DP and the surrounding infrastructure. Some citizens (and some staff) lack motivation, skills and knowledge. Further, results show that the content of the message vary from indifferent information to content that the citizen needs to act upon and which may have serious consequences if not acted upon.

A final aspect should be mentioned. While the findings of this study attribute the unanticipated impact from DP to the enacted technology, it is interesting that there has been almost no attention paid to the objective technology itself, i.e. the DP system. The objective technology is actually perceived as an acceptable application, which supports the claim that the critical focus should be on the enacted technology.

This process demonstrates some characteristics about Danish e-government implementation including: insufficient central preparation (legal barriers), unrealistic business case leading to deficit, insufficient over-all implementation model leaving the public institutions in despair with a vast amount of technical challenges, insufficient focus on how citizens experience the solution, limited interest among the Digitization Agency and LGDK to learn from the process or about practice or adjust process or solution accordingly, no focus in adjusting business case

according to reality and little urge to evaluate the initiative. Also, the strategy of relying on the commercial software market must be thoroughly considered; whether the lack of project control may outweigh the supposedly cheaper solutions that result from the market forces.

7.1.1 Impact on citizens

A CMS relies on the certainty that the person who is logged into the system actually is that person, which is why passwords need to be kept secret (Tauber, 2011). This is the situation with the EasyID that allows access to DP. The Danish government has exacerbated the situation further by selecting sensitive personal information (the CPR) as the login for citizens. DP was not designed to forward to non-secure e-mail, due to security and privacy issues and was not designed for digital posts to be printed or saved on the. These design options impose severe restrictions on the use and usability of DP.

Before DP, citizens could decide by themselves, whether they would share a letter from a public institution with a family member, a neighbor, a lawyer or share a form with the case handler to fill out in collaboration. While the regular mail afforded shareability, the digital post does not afford shareability due to the sensitivity of login information and the lack of materiality.

There has been criticism by many citizens from the beginning that 1) DP does not inform citizens whether the digital post is necessary for the citizen to react upon (see the e-mail alert, figure 9, p. 19) and that 2) citizens themselves cannot decide, whether to have the digital post forwarded to a regular e-mail address. If DP had been designed to forward at least the subject of the message and/or flagged as 'important to react upon' by the public employee that generated the message according to the message type, the citizen would know how to balance the perceived not so easy to use EasyID login with perceived urgency. This feature alone would properly reduce the level of uncertainty and anxiety connected with DP. Furthermore, this would reduce the serious problem of citizens not seeing their DP, which may be perceived as the biggest cause of generating harm to the citizen and increased workload for staff. Of course, it would be even more flexible if the entire digital post could be forwarded to a non-secure e-mail address automatically. Moreover, this would improve the shareability because the citizen could forward the e-mail to trusted third parties. This option has been requested by many citizens. Why should the State decide what data protection level the citizen wants as expressed by a citizen? This statement from a citizen is in line with the observation by scholars that younger generations may have a more relaxed approach to privacy issues than had been the norm for many years (Bannister & Connolly, 2014). In requiring e-government, governments have access to personal information about citizens and it is regarded as highly important that governments attain the necessary measures to protect this information. This study proves, however, that the need to ensure citizen privacy must be balanced with the trouble that citizens' experience utilizing the e-government services. The citizens' rights to decide over the use of their own data is at stake, which was foreseen as an issue as early as 2006 (K. V. Andersen & Henriksen, 2006).

Joint access to citizen's documents by the citizen and the public employee are needed by staff to be able to offer citizens the necessary assistance and according to staff, citizens react negatively and emotionally on the refusal of staff to assist citizens in operating the computer (keyboard, mouse, touchscreen etc.). Before DP, staff and the citizen handled the paperwork together or staff sometimes even filled out forms on behalf of citizens. When relating to this matter, it is appropriate to be aware that staff have legal access to information about the citizen in the various public sector systems anyway, e.g. the CPR system. It is also necessary to acknowledge that login with EasyID is stated by many public employees to be difficult for citizens (supported by comments from citizens).

These practical barriers have received a great deal of attention from staff and could be removed by different design solutions as identification rather than login by keyboard - or even better, easier and cheaper – a consent given by the citizen in the particular situation that the public employee may access the necessary documents to handle the case or register the necessary information in the computer. Practically, this could be done by the citizen signing a form (either in paper or on the screen), which is something citizens are used to and comfortable with.

According to staff, DP has an effect on citizens. Citizens may not be motivated to see their digital post or may not have the personal competences to access DP. This may have various consequences, amongst others, that citizens do not apply for welfare benefits, that they lose benefits due to not having responded to a confirmation that they might lose services or that reminder fees are imposed. Staff especially reports on vulnerable citizens. Citizens without the necessary computer and/or Internet connection and/or IT skills also have difficulties managing DP.

Generally, DP is perceived as far too complex, mainly due to operating and maintaining the computer, mouse, keyboard, touchscreen, printer, Internet connection, EasyID with all the hardware and software that are included. The recurrent updates of software in English and the risk of installing other (unnecessary software) are reported by staff as imposing severe constraints to some citizens.

It is the complexity of the technology, combined with the inabilities of some citizens, together with the situation where citizens are dependent on the public sector, which create the most difficult situation. As mentioned, staff report that citizens get emotional about the situation they have been put in. Finally, the communication barriers that the study revealed (see 6.1.5, p. 113), may also have a negative impact on citizens ability to understand and respond correctly to their digital posts.

7.1.2 Impact on public employees

Staff have reported in various ways about their perceived increased workload. Increased workload is attributed to citizens or to technology (paper 3, paper 4, paper 5 and paper 6). Citizens that do not trust the digital communication and are seeking confirmation by other channels comprise one source. Public sector operations rely heavily on written documents. When public institutions send digital documents to citizens and they do not have a printer, in many cases, public employees end up printing and sending physical letters to citizens. When citizens have not noticed their digital post, staff may perform stressful last-minute actions to prevent negative outcomes for citizens, or staff may need to perform subsequent actions because a deadline has been superseded. Further, staff needs to help citizens operate the technology that is seen as difficult by some citizen. Staff perceive that the DP technology is too complex, that the diverse systems involved do not work together and or DP does not support the entire work process. For two years, staff experienced the main system for sending digital posts (the output manager) could only in a very troublesome way deal with attachments, which are included in the vast majority of communications with citizens. Applying manual workarounds may lead to errors that later need to be corrected. Lack of receipts from Digital Post and the design of the digital post when it is received from the citizen make digital posts difficult to locate, hence confirmation of receipt and recording of sent digital post is troublesome. Staff report that new work processes have not been established and decisions have not been made about how to operate in specific situations.

Besides actual perceived extra workload, public employees report psychological effects. Job insecurity and the pressure to always think and work more digitally are prevalent. DP has no opportunities for staff to experiment with and try out the system and generally, staff feel that

there is no allocated time to train with new systems; the learning about new systems occurs while actually serving the citizen, which adds a feeling of insecurity to the working situation. Staff experience that they need to defend the Digital Post system and the way that it has been enacted, especially the enforcement and the unworthy requirement that citizens must go to the town hall to be exempted from Digital Post. Staff report on various emotional reactions from citizens, including anxiety, anger and aggressive behavior. Finally, public employees feel that they are no longer allowed to provide the necessary assistance especially to especially the vulnerable citizens due to the sensitivity of the CPR during EasyID login as they must not operate the computer on behalf of citizens that come to Citizens' Service Centre for help. The constraint on assistance of the citizen is perceived as reducing the work life quality of clerical staff, since serving and assisting especially the vulnerable citizens comprise the main job motivation. Reinforcing this feeling is also the need to impose a digital service onto citizens that the public employee herself does not find right, for instance to send a digital form to citizens that cannot be answered digitally, thus expecting the citizen to print and mail or that elderly citizens must travel to the town hall to gain exemption.

In critical research and PD, managers are perceived as representatives of the ones in power and not as potential victims of technology deployment (Cecez-Kecmanovic, 2005; Simonsen & Robertson, 2012). This study, however, has revealed some ethical dilemmas that managers needed to face. The uptake of new technologies is positively related with the possibilities to experiment (Rogers, 2003). Managers are responsible for staff having the necessary capabilities to operate the system. DP was used for training in the two case municipalities, where staff used their own CPR to test and gain knowledge of what a digital post looked like at the citizen end. The use of staff CPR was deemed illegal for staff training purposes by the Data Protection Agency. Another situation is where staff find that it is a poor service to citizens is having to force them to print a letter from the local government. Should the manager order staff to send digital post or allow staff to operate on own initiative and reduce the savings to the local government? This can be extended to the vulnerable citizens. Staff have a very clear perception of which citizens are not able to handle DP, e.g. the elderly without computer, the mentally ill, some disabled citizens, citizens that do not understand Danish etc. Normally, it would be considered a virtue of public employees to treat citizens differently when citizens have different needs and to be able to maintain fairness (Cooper, 2004; Pratchett & Wingfield, 1996). Should the manager let staff have the decision-making power over the communication channel that best fits the citizens' needs? Citizens get angry when they have not seen an invoice in their DP and this is followed by one or more reminder fees, which are also sent digitally. Should the manager decide to give citizens a chance to stop the fees by sending all reminders as regular physical mail reducing the savings? Another situation derives from the DP business model, where public institutions pay transaction costs for digital posts but may send regular e-mails for free. Should the manager (or staff) prioritize convenience for the citizen to have all communication in the same digital archive or should the manager allow staff to communicate through e-mail to save money (like the Tax Agency does), but enforce inconvenience onto citizens and the risk that sensitive information is sent in a non-secure way? Finally, the CEO also has some dilemmas. The CEO might know that the reduction of State funding is grounded in an overly optimistic business case and he knows that the deficit is imposed on the local government economy with consequences for staff and/or citizens to follow. Should he take the fight within the LGDK and demand that public institutions be compensated for a deficit they are not responsible for – and stand out as a leader that is against the technological development or that cannot manage to facilitate the necessary change in his own organization?

E-government operations within the public sector have had little attention by e-government researchers (Yildiz, 2007) and our understanding of e-government is limited (Luna-Reyes et

al., 2012). Public employees may be key to the organizational changes that precede benefits from e-government (Ndou, 2004), yet, e-government adoption by public employees has not gained significant attraction and theory building has been sparse (Nripendra P Rana et al., 2013).

This study shows that public employees to a high degree are affected by e-government along with affecting e-government.

7.1.3 Impact on organizations

The Ministry of Finance estimated that local governments would send approximately 20 Million digital posts in 2013 and State funding was reduced accordingly. The local governments actually sent only a little more than one fifth of the estimated digital posts. The Ministry of Finance and LGDK did not evaluate the business case, hence, the reduced State funding was not regulated according to the realized postal cost savings. Also in 2014, local governments did not realize the anticipated volume. Clearly, this has a negative impact on public organizations. The Danish e-government strategy is driven by efficiency goals, clearly stated by the Digitization Agency and LGDK in opening speeches at the yearly e-government convention, thus there will be job cuts from realizing the strategy. The State funding to local governments was reduced by DKK 103 Million in 2013, which equals around 200 man years. Even though, this has consequences for the individual, this is a political choice, grounded in democratic decisions. When public institutions, however, cannot convert as many physical letters to digital post as expected, this entails an additional postal cost, which, inevitably must lead to further job cuts, service cuts or reduction of the institutions' savings.

The deviation between the estimated and realized number of digital posts may be grounded in barriers that can be controlled by the institution, such as staff mental barriers, lack of managerial power or internal interoperability or technical development issues. The deviation, however, may also stem from an overly optimistic business case. Even though, this study only gathered a small number of local government baseline measures, data indicated that the estimate from the Ministry of Finance of the digital post potential is around the double of the municipalities' own estimate (paper 2). Finally, a number of barriers to digital post could not be controlled by the public institution. DP was launched in 2010 and it was only at the beginning of 2014 that two major legal uncertainties were settled, namely the digital signature and the legal permission to access CPR using DP. Further, the major ERP and application systems only introduced integration to DP in 2014 and digital forms (that awaited legal digital signature) were only introduced during 2014. Further barriers resulted from the limited commitment of major public institutions such as the police, the State church, the courts and the Tax Agency. The study indicated that more than half of the potential digital posts could not be employed due to barriers that were beyond the control of the public institution (paper 4). Moreover, DP staff adoption were hampered by the staff perceptions of DP as a reduced service to citizens (paper 6), which reduced the effects of DP even further.

DP is supposed to enable cost savings for the public sector; however, the driving actors do not seem to care about whether this is actually true. Even though we easily could gain access to postal cost data from the main Danish post company, neither the Ministry of Finance nor the LGDK would actively assist in gaining access to the data. Furthermore, LGDK claimed that they were not interested in evaluating the effects of the e-government initiative. This lack of interest in exploring the effects of DP by measuring postal costs was also found at the public institution level.

To be able to evaluate the Digital Post business case, we had to make several assumptions about vital prerequisites due to lack of information or vague answers from the Digitization

Agency. When we published our calculated results of the evaluation, LGDK attempted to undermine our calculations in public, claiming that the calculations were grounded in the wrong data. Furthermore, both the Ministry of Finance and LGDK publicly argued that it was not interesting to evaluate DP according to a specific year, but that it should be seen over the project's lifespan. Such argument carries absolutely no logic in a local government economy where income and cost must balance on a yearly basis.

It is not uncommon that public sector IT investments are not evaluated due to the anticipated effects (Goldfinch, 2007; Jones et al., 2007). Evaluation of e-government initiatives can document whether a project has reached the expected effect. Caution with taxpayers' money alone, would justify evaluation. When a reduction of state funding is so narrowly connected to the anticipated effects that the institution may not control, it is interesting that the local politicians do not demand evaluation. Especially, when it is known that effects from big projects tend to be overestimated from the start and further, central government may have an incentive to be overly optimistic in order to further minimize State funding to local governments. Local governments, however, have transferred their mandate to LGDK and it would be considered inappropriate to criticize one's own organization.

Ultimately, a deficit in the local government will harm the citizen or staff. It constitutes a democratic problem that consequences of e-government initiatives are not evaluated and that a deficit due to conditions that cannot be controlled by the particular organization are not covered by the State. When the parties that have agreed upon the economic arrangement, refuse to perform an evaluation, it is crucial that independent outsiders are able to safeguard democracy by performing an evaluation of e-government initiatives. This has not been possible for the DP due to business case assumptions not being available and clear, and the necessary data not being accessible.

By not performing evaluation and not facilitating and assisting others do the evaluation; the State misses the opportunity of learning from the evaluation. Our findings of significant differences in local government DP adoption (paper 2) provides an excellent starting point for exploring the best and worst practices for operating DP.

Local government managers have acknowledged that the implementation of Digital Post has been too challenging due to back-office integration (Lundström, 2014, 2015) and that they were not ready to send it to citizens when citizens were forced into using DP.

7.1.4 Impact on public sector ethos

Certain values and beliefs may exist amongst public sector employees; a public sector ethos, which includes amongst other things loyalty within public sector institutions and an urge to serve the public interest *per se* and not just the narrow interests of the particular public institution (Pratchett & Wingfield, 1996). Even if it is difficult to exactly define public interest, public sector employees are not in doubt that it exists (Cooper, 2004) and are rather robust towards changes from external pressures (Pratchett & Wingfield, 1996). As a consequence, Roman (2013) recommends being sensitive to negative changes in public sector ethos because a undesired change would be equally hard to restore.

The study shows some indications about changes in public sector ethos, which are also addressed in the NDP study (Berger & Andersen, 2013a) and paper 5.

The study has revealed a fragmented public sector, where different levels of public sector, different public institutions within each level and different departments within the same public institution have shown different commitment and capability to realize this immense change in public sector operations. Reduced cross-sector public loyalty is expressed by staff when they

experience that other public institutions, other departments and/or other sectors (as the Police) do not communicate through DP. When other public institutions do not comply, staff need to combine both physical and digital post in the same communication, which is troublesome and costly. When DP is coercive, staff expect that all public institutions comply and they express outrage when a court or a priest refuses to receive a digital post.

The mantra of the e-government strategy that ‘those [citizens] that can, must’ (6.5.3, p. 140) has affected staff. It may not be surprising that staff tends to answer citizens in need by directing them to the public institution website to serve themselves, which is what we discovered when we contacted all Danish public institutions in the NDP study. This tendency is further stressed by the privacy and sensitivity issues concerning CPR and EasyID login. There is widespread staff recognition of this – in some institutions even mandated by management, entailing that staff are hindered in helping citizens (paper 5). This tendency of citizens having to take their own responsibility is recognized as a more general tendency in public sector (Mik-Meyer & Villardsen, 2012). The reduced citizen contact due to a massive redirection to coercive citizen self-services over the Internet further leads to alienation (Roman, 2013). Our NDO study of responsiveness had the alarming result that half of the respondents did not care whether or not the citizen had received the answer from the institution – they were satisfied with their performance because they had done what they had to do (written the answer to the citizen) and did not feel that it was their responsibility whether the DP infrastructure actually delivered the answer to the citizen or not. The reduced sharability of documents from public sector institutions only isolates the citizen further.

Finally, there are indications of staff mistrust towards citizens that want to be exempt from DP. Some employees express the demand for control measures as to whether citizens are lying when they claim that they have no computer in order to be granted exempt from DP. Given the harsh rhetoric of the DP law, legal notice and processes around exemption from DP, these statements may not be surprising.

Reduced inter-institutional loyalty, reduced support for citizens, increased alienation and mistrust towards citizens are indications of major changes to the public sector ethos that critical researchers need to actively relate to and make the citizenry aware of. DP is a result of a democratic decision in parliament, however, this enactment may entail changes in society that violate the common idea of how a public sector should treat its citizenry.

7.1.5 Negative impacts follow from a flawed implementation

The negative impacts of DP are primarily attributed to inappropriate implementation strategy choices.

- No joint responsibility for the overall solution of the digital communication between public institutions and citizens. The Digitization Agency has responsibility of part of the infrastructure (the DP system, Citizen.dk and EasyID) and every single public institution has the responsibility of the connecting infrastructure
- A too flexible DP solution that leads to a multitude of variations of solutions to support the entire communication chain
- Reliance of the private sector software market to deliver the needed components, which has entailed a lack of control of the implementation process
- No coordinating entity with power to ensure compliance to the project from vital areas of public sector
- Vital poor design choices based on a too narrow ground
- Lack of responsiveness and agility to adjust the wrong decisions
- Insufficient time frame to cope with this immense change project

As there has been no single responsible entity for the DP solution, the Ministry of Finance could claim (and has) that the technical solutions were all in place even though the vast majority of public institutions did not have the technology in place to either receive or send digital post.

This process demonstrates some characteristics about Danish e-government implementation. Insufficient central preparation (legal barriers), unrealistic business cases, an insufficient overall implementation model leaving the public institutions in despair with a vast amount of technical choices and challenges, insufficient responsiveness to citizens' experience and reactions, no interest among national-level actors to evaluate and learn from the process or be informed by practice, a limited national level understanding of consequences of enforced solutions on citizens, insufficient involvement of civil servants in informing the design and implementation.

7.1.6 How could the negative impact from Digital Post have been avoided?

A claim has been made about the DP project that it is hopelessly old fashioned, partly because it is based on an 'e-mail concept', thus totally missing younger generations that do not communicate by e-mail and partly because it ignores the effect of reducing postal costs by simply reducing the *need* for written communication (Arre, 2014). For instance, the principle of written consent as a condition to uphold welfare benefits could have been re-evaluated and other means could have been tried out.

However, accepting the premises of the DP project – to substitute physical letters with digital post, a few changes would have alleviated the negative impacts.

Harm to citizens could have been reduced by the following:

- Enabling the forwarding of digital posts to a regular (not secure) e-mail and/or social media account. By allowing this, the harm from not seeing a digital post would be reduced significantly because many citizens have gone digital in one way or another
- Citizens should have been allowed the easier view-mode access to EasyID as is offered by the financial sector
- Privacy issues, hindering vulnerable citizens getting the necessary assistance would have been less important if EasyID was not based on the sensitive CPR. Again, given the design of the EasyID, civil servants could have been allowed to assist citizens in need more directly by operating the computer on their behalf when visiting the Citizen Service Center – prioritizing assistance to citizen privacy
- Applying for an exemption should have been much easier. This could have been offered by phone, by a signed post card or a simple e-government service with only entry of CPR and a confirmation to comply with the conditions.
- Certain vulnerable citizens should never have been forced to comply
- PDF Forms should only have been allowed by DP when they could be signed digitally. In this way, citizens would not have to print and mail them and public institutions would have had an incentive to implement digital forms

Harm to public employees is primarily from citizens or technology and could have been reduced by the following:

- Technical complexity could have been reduced if all public institutions were given the same end-to-end pre-configured solution with standard digital mailbox hierarchy and internal distribution

- Initially, one system should have been assigned to receive and send so public employees should not use different systems for different applications. This could have been the case-handling system and the integration to DP should have been implemented before DP launch
- It should have been possible for staff to try DP in the real setting and monitor the result from the citizens' side, for instance by allowing use of own CPR or a view of the digital post in the citizen end
- External receipts to citizens should be sent when digital post from citizens was received by the public institution. This would reduce the perceived need for citizens to confirm receipt, thus decrease inquiries from citizens to staff.

Harm to organizations could have been avoided simply by evaluating the business case behind the reduction of state funding and regulating the reduction accordingly. This would have meant that local governments would have had their state funding reduction decreased significantly for 2013. This would ensure that organizations did not suffer a deficit from DP, which would lead to service cuts, lay-offs or financial losses.

The public sector ethos would be less affected by DP if an acceptable balance was maintained between public sector and the citizen regarding demands and obligations. A right for citizens to demand digital communication from particular public institutions would have maintained some balance. Further, a rhetoric and discourse that was based on the urge for civil servants to help citizens be mandatory digital would help prevent mistrust. A penalty for public institutions that did not comply with DP would also restore balance, and ultimately, a tax reduction to compensate for citizen costs to maintain computer and Internet connection.

Generally, the implementation of DP would have benefited from reduced complexity (given the existing organization):

- Reduced project scope, by only including digital post from public institutions initially. A vast amount of messages are going outwards from public institutions and Digital Post performance goals are only connected to outwards messages.
- Incremental evolution instead of big bang could have been realized by starting with digital post between public institutions; second step, digital post to businesses and third step, digital post to citizen. The project should have been tested, evaluated and readjusted before entering the next step.
- The DP project should ensure end-to-end communication with a standard configuration for all public institutions of only *one* solution that should be developed and operated by the Digitization Agency. The Ministry of Finance should coordinate and fund the DP integration from the most important DP feeder systems (the systems that feed attachments to DP). Transparency in the end-to-end communication process should be ensured.
- Project controls to mitigate fragmentation amongst public institutions, i.e. to ensure sufficient commitment, resource allocation and implementation within the same timeframe.
- Involvement of and responsiveness towards operating staff in public institutions and towards citizens. Responsiveness as in 'listening to' and 'learning from' staff and citizens to be able to iteratively redirect and adjust the project action in an agile approach.

7.1.7 E-government harm is mitigated by a responsible e-government ethics

The current Danish e-government strategy covers the period 2011-2015. The Digitization Agency has the mission to deliver the politically-decided e-government strategies and has kick-started the process that should result in the next e-government strategy 2016-2020. However,

who says that the Danish people need a next e-government strategy? Acknowledging that the coercive e-government strategy has imposed harm, we must recognize that we need to stop the current trend - where more digitization is automatically perceived as better - make a halt, and reflect over the past years of experiences with coercive e-government. Two critical tasks await us, namely defining the grounds for future e-government that does not entail harm and evaluating on the past experiences. This has been treated in paper 7.

First, we must take the time that is needed to find ways of using digital technology that is not harmful. With 'we', I mean the 'people' that have to live with the coercive digitization in relation to public sector. 'We' does *not* include the e-government institutional field that actively and constantly exerts pressure for more technology. Regretfully, we cannot rely on the elected politicians; they do not exert the will, knowledge or courage to intervene and question the e-government institutional field. We need to raise our head above the particular technical solutions as EasyID or DP. We need to address which ethics should guide future e-government. When we have formulated a responsible e-government ethics; we need to define the remedies to maintain this ethics (e.g. following Ekhatior, 2013). Only then can we begin to address *whether* we want a new e-government strategy, if it should be coercive again, what this strategy should cover and what it should *not* cover. The Danish parliament should immediately stop every plan in the e-government institutional field (led by the Digitization Agency) before even imagining the content of a new e-government strategy. The people need time to formulate alternatives and develop the strength to resist the taken-for-granted natural drive for constantly further digitization. The citizens' trust in the public sector may be at stake and might only be restored by involving the people genuinely, if the e-government institutional field is allowed to prepare and exert pressure for the next coercive strategy.

Secondly, we need to draw on learning from experiences with the current first coercive e-government strategy in Denmark. The general director of the Digitization Agency has announced that usability is the most prominent future initiative. This is a misunderstanding. Usability is trivial. Vendors may manage that if they have sufficient time and resources to develop and test by situated user involvement. What should be evaluated is the complex coexistence of various systems, organizations and work processes in relation to the available resources and competences of organizations, staff and citizens in particular situations. An evaluation must recognize the variances and complexity of the enacted e-government and that people (staff and citizens) perceive e-government differently in different situations. Having evaluated what harm the current e-government exerts, and from what particular attributes of the coercive e-government, it is pivotal to find models that can ensure the involvement of staff and citizens in the design and implementation processes of future e-government in the particular context. A new design that makes EasyID more easy to use is not sufficient if the citizen cannot maintain the computer on which the EasyID runs. Likewise, staff need to be assured that new e-government will be tested by them in the particular work context and that they can test it from a citizen's perspective.

Responsible e-government ethics

This study has shown that organizations may suffer economically from e-government initiatives, public ethos may suffer, vulnerable citizens may suffer and staff may suffer from increased workloads. Grounded in the principle of protection of the citizen from the State, the Danish Constitutions (equal access to welfare benefits and access to necessary information to control the public sector), the needs of the citizenry and the public interest, the following 10 principles for conducting ethical coercive e-government is suggested, see figure 48.

<p>Concern for public ethos</p> <ol style="list-style-type: none"> 1. A balance must be obtained between citizens' and public institutions' rights and obligations 2. E-government initiatives must always be assessed within the wider long-term impact on public sector ethos <p>Rights for individual citizens and staff</p> <ol style="list-style-type: none"> 3. No one older than 70 must be forced to use e-government 4. No beneficiaries must be forced to use e-government 5. E-government must not harm citizens or staff 6. E-government must not entail increased taxation 7. A coercive e-government service must always supply the necessary receipts to citizen and public institution and must always be accompanied by a non-electronic emergency solution <p>Power to staff</p> <ol style="list-style-type: none"> 8. Public institutions that are subject to coercive e-government must receive a 10% increased funding for at least two years from operation 9. Staff have a veto towards coercive e-government <p>Assurance for control of economic consequences</p> <ol style="list-style-type: none"> 10. The economy in every coercive e-government initiative must be transparent and accessible, and due to automatic regulation when deviating from business case

Figure 48 Responsible e-government ethics, suggested from this study

Principles 1 and 2 are concerned with public ethos. This study has revealed that some civil servants prefer to direct citizens to self-service on the Internet instead of assisting citizens with direct answers. Staff have reported feelings of alienation resulting from increased citizen assistance through the Internet instead of face-to-face assistance. Alienation was also found where staff were satisfied with their performance despite the fact that their action did not reach citizens. These changes may only be incremental as stated by Roman (2013), thus hard to notice. However, these changes will be difficult to reverse if citizens suddenly discover that e-government has changed the way they are treated by the public sector – and do not appreciate it. The first principle will regulate the power that the State can exert over citizens. In the DP case, citizens have no rights at all but public institutions have the right to use whichever channel to contact the citizen. Despite that fact the citizen must accept digital communication from public institutions. Furthermore, it may have serious consequences if citizens do not comply with the DP law; whereas there are no consequences for public institutions if they do not provide the promised e-government services, e.g. being contactable in DP or establish the necessary capabilities to operate the e-government services.

Principles 3-6 are meant to protect individuals from e-government harm. The study has shown that elderly and vulnerable citizens are in risk of being affected negatively by e-government due to inadequate digital competences. This may practically be delineated to the elderly and the beneficiaries. The beneficiaries must be protected from coercive e-government because they, by definition, are in some kind of life crisis and because they depend on public benefits as their livelihood. The age limit for being elderly has been arbitrarily determined in the suggested ethics. One respondent from the CSTU survey even suggested that citizens older than 50 should not be forced. It could be argued that the limit should follow the retirement age because it is known that IT competences and support to a high degree stem from work places (IT departments and colleagues) (J. Ramon Gil-Garcia et al., 2006). Practitioners may argue that by excluding these large groups of e-government users, the performance goals would be difficult to achieve. The principles do not say that these groups may not use e-government, only that they cannot be forced to. Consequently, governments may do, what has always been the challenge to e-government, namely make the e-government services attractive to citizens. Principles 3 and 4 should be applied by registering citizens in the two groups as exempt in the system. Citizens that would use DP have to actively re-register, but this inconvenience is by far outweighed by the potential harm to less able citizens. Citizens that are on welfare benefits per 1 November would be exempt in the coming year and then reassessed. Principle 5 is the principle that generally protects the users of coercive e-government. The principle states that e-government must

not harm citizens and staff. Harm is not defined but must be interpreted and assessed in a particular context. The formula safeguards the users even from harm in the future, the form of which cannot currently be anticipated. Finally, the 6th principle states that e-government must not be an extra tax. The Danish e-government strategy requires that citizens use their own computer, printer and Internet connection or transport themselves to a public library, which offers Internet access. In either situation, the requirements inflict economic consequences for citizens. The Danish government has issued a media tax, which applies to every citizen with a computer and Internet access. The e-government strategy should result in a corresponding tax reduction due to imposed costs to comply with the e-government requirements. As has been noted by staff, it is not worth forcing citizens to read private communication in a public space. That is why the tax reduction should be based on the cost to obtain and maintain computer and Internet connection in one's own home.

A digital post may include a link to an e-government service. For instance, when company owners need to declare VAT, the owner may receive a regular e-mail with a link to the company portal that allows access to the tax system, where the VAT is to be declared. This process will include several systems, namely an e-mail system (Outlook or a browser for web-mail such as Google), the company portal Company.dk, the EasyID and the tax system. Various organizations are responsible for the different parts; for instance the computer vendor, the Internet provider, the browser vendor (, Google etc.), the Danish Business Authority (responsible for Company.dk), the Digitization Agency (responsible for EasyID), Nets (operator of EasyID), the Tax Agency and maybe third parties such as Oracle (Java) or Adobe (Acrobat reader). In this situation, the company owner receives a fine if VAT has not been declared within a certain deadline. The failure to declare VAT can stem from a variety of malfunctions (the computer might not meet performance requirements, failure to install Java, failure to run EasyID, Company.dk does not direct to the VAT solution etc.). The author has tried to install EasyID and had an error message that read: "Insert the necessary hardware", which is totally out of context. The author could not login to Digital Post through the Internet provided by University of Technology, Sydney and was directed to e-Boks for support on DP login by the Digitization Agency. One day Citizen.dk was down for updating, the interim website offered another link to login to DP, which worked. Hence, the error was not with e-Boks and DP but with Citizen.dk and the Digitization Agency and the vendor that operates the site. Every time, an e-government service has to be operated by the citizen, it involves the computer (for hardware and software), EasyID, Citizen.dk, a responsible agency or local government environment and the privately developed IT system that the citizen is going to access (for instance DP). A case in the NDP study revealed a situation that included Outlook, secure e-mail system, Digital Post, Citizen.dk, EasyID and computer with hard and software (see 6.1.5, p. 113). In this case, the message displayed as HTML and, thus, had failed from the local government to the citizen and the citizen had no proof that it was not his fault. The 7th principle will safeguard this situation and ensure that there is some kind of evidence of what the citizen has done or not done (by the system sending a receipt or not). The proof is likewise needed for the public employee that something did not work out right. To allow the needed action, this principle states that there must always be an emergency non-electronic solution. There are several challenges with this principle. An alternative solution may involve other channels as telephone or mail. How would such an alternative be provided without citizens using it to omit the digital solution? This principle ensures that the citizen can deliver his message/fulfill his obligations and have the appropriate documentation of the actions or non-actions to mitigate legal consequences from the State.

Performance goals drive e-government, thus it inevitably leads to public employees losing their jobs. Lay-offs will be directed by the reduction of the State funding, rather than the surplus of

human resources due to realized efficiency gains. This may lead to a situation, where the department that is struggling with the new e-government initiative is exposed to headcount reductions, while – on the contrary – they need added resources in order to implement changes (as stated by local government managers). The 8th and 9th principles safeguard this situation by declaring that affected departments must have an increase in funding during the first two years of an e-government implementation. If staff are not satisfied, they are granted the power to postpone implementation until conditions are satisfying. This right will be carried out within the formalized employer-employee collaboration scheme in public institutions. The 9th principle also covers the national level and grants the affected trade unions a right to veto an e-government initiative in negotiations with the Minister of Finance and local government organizations.

The last principle concerns the economic consequences of an e-government initiative. When we revealed that local government had had a deficit in 2013 from Digital Post, the media wrote that “[e]-post is no goldmine” (Svarrer, 2014) and “[s]urprisingly little saved on digital post” (Ritzau, 2014b). These statements show a misconception of the situation. Local governments have not saved less than expected, but had actually lost money, because the State funding was cut beforehand. This complicated mechanism makes it hard to communicate the message, which makes it even more important to be able to evaluate the result of operation of a new e-government initiative. The study fully showed that it is necessary to integrate the evaluation of the e-government initiative into the project from the start. This is not new, and the necessity of evaluation schemes and baseline evaluations will be trivial for project and portfolio managers. The Digital Post case is fairly simple to evaluate as stated (see 6.3.1, p. 119) as postal costs in the year minus postal costs the year before. At a network meeting at Digitization Agency in spring 2012, the author suggested that the State authorized accounting for DP costs in a standardized way for all public institutions. This would have made it very easy to evaluate the realized cost reduction. This was not supported by the Digitization Agency for no reason in particular. The explanation could be that authorizing accounting is within the Ministry of Economy and the Interior and not the Ministry of Finance. It proved impossible to obtain postal data from most involved institutions and when it was possible, the data was of poor quality. When the author evaluated the effects from DP indirectly from number of digital post transactions and unit costs, the Digitization Agency and LGDK asserted that the author had not included the right data as stated in the business case. The principle will assure that the assumptions for the business case are clear and that there is access to them. Only by enforcing the Ministry of Finance to reveal all the needed information, it is possible to evaluate the gains or losses for the particular public institutions. Since the realized postal reductions are calculated by neither local governments nor the Minister of Finance, the reduced State funding cannot be regulated. If the loss is not regulated, e-government will impose an extra taxation of the citizen since local governments must cover the more spending of postal costs from further reduced staff, reduced services to citizens or by draining the cash balance. The last principle enforces the Ministry of Finance to evaluate the gains and losses of public institutions and to regulate accordingly

Institutional framework for maintaining ethics

The maintenance of the principles of ethical coercive e-government is grounded in the recommendations from Ekthor (2013) of a regulatory body, transparency, control and prevention and international conventions, but adapted to the Danish context, see the institutional framework in Figure 49.

<p><u>The Council of E-government Ethics</u> Interprets compliance of the principles for ethical coercive e-government in particular incidences from an expert and a public view</p>
<p><u>The Citizens' E-government Complaints Board</u> Awards compensation for citizens, where public institutions have violated the principles for ethical coercive e-government</p>
<p><u>The State E-government Audit Department</u> Performs control and consultancy towards public institutions of compliance of the principles for ethical coercive e-government</p>
<p><u>EU-convention</u> Commits the government to comply to the principles for ethical coercive e-government and allocate appropriate funding</p>

Figure 49 Responsible e-government ethics institutional framework, suggested from this study

A code of conduct cannot be exhaustive in a complex world and as it applies in situated action, it is subject to interpretation, which may be different by different individuals and organizations. The maintenance of e-government ethics, thus, is recurrently exposed to interpretation in distinct incidences by a Council of E-government Ethics. This study has posed many ethical questions. Is it right for public institutions to mandate e-services, to force citizens to be users of the electronic media? And if it is right, should an exit analogue strategy for a particular e-service, likewise, be mandatory? May e-government create feelings of anxiety amongst citizens? Is it right to lay-off staff in the department that is struggling with new e-government services? May e-government impose economic loss on public institutions? May e-government create unequal access to welfare benefits? Is it right to send digital forms to citizens to print, fill out, scan or mail with the implied dependency of computer, Internet connection, printer etc.? Is it right for government to impose e-government initiatives to lower levels of government and reduce the funding according to estimated costs reductions? Is it right to do it without a transparent publicly accessible business case or without recurrent evaluation and regulation? Is it right to impose e-government on beneficiaries that may be considered weak in electronic communication capabilities? Is it right to impose e-government on citizens aged 70+? Is it right that citizen must spend money on computers and Internet access because public sector has decided to cut postal costs? Is it right that the citizen cannot get help operating the computer at the Citizen Service Centre? The answers to these ethical questions and others that may be derived from experiences with coercive e-government will eventually constitute a knowledge base that supplements the principles as court ruling in particular cases supplements the actual laws and together comprise the legal framework. Hence, the assessment of compliance of the ethics is equally important as the actual principles. The coercive e-government ethics are formulated to safeguard individuals. The Ethical Council must forward cases for advisory opinion by the public to mitigate elitist distance to experienced reality from the experts.

When public institutions violate the principles of ethics coercive e-government and citizens have experienced a loss, it must be possible to complaint. Today, citizen cannot file complaints for bad e-government. A Citizens' E-government Complaints Board is recommended. The citizen can complain in many situations about the treatment or decision of a case, which is regulated by the actual laws in the particular domain and the complaint is treated by experts in the application domain. The Digitization Agency Secretary General has in an interview addressed this need and claimed that complaints grounded in e-government aspects could be handled by the existing institutions (DR P4, 2013). It could be argued that e-government operates with similar deficiencies across public institutions and that lack of e-government knowledge and understanding in the particular domain and the need to exert equal pressure on similar cases across institutions calls for a common complaints board. It could be argued that public institutions and employees might also be able to file complaints to such a board. The board will as-

sess the financial compensation or rule on a change of case handling. Such a ruling has been set by the Council of Appeal on Health and Safety at Work and proved that a complaint body may influence the e-government operations.

This study has shown that public institutions in many cases do not do what they say or do not do as the Minister of Finance requests. This may not be due to resistance, but may stem from lack of sufficient competencies combined with the e-government complexity in an stressful everyday operational situation in which technology does not have as high a priority as performing the actual day-to-day task of the public institution. This study has shown how public institutions are not aware that the entire chain of dependent systems and functions does not work as expected. Further, public institutions may not apply e-government in an efficient way, which has been seen in this study related to the various barriers to Digital Post. This study has also shown that the public institution cannot be trusted to exert self-control. A State E-government Audit Department is necessary to control whether e-government solutions function end-to-end as the public institutions claim they do and whether they are applied in a way that makes the public institution more efficient. Control is needed to check if every public institution is registered in the DP address book, if DP postboxes are efficiently linked to back-office recipient e-mail accounts in a way that supports work processes, whether there is the ability to answer digital post from citizens and proper identification of the public institution in the particular digital post – all these are examples of tasks that could be addressed by the State E-government Audit Department. It would also control the transparency and accessibility of the business cases of e-government initiatives and check whether proper evaluation and economic regulation have been put forward. Preventive measures would be provided by delivering consultative services towards public institutions might be part of the job of the Department.

It is the State that exerts the coercive e-government and it is the State that controls the institutional framework that supports the maintenance of the principles for ethical coercive e-government by resource allocation. Obviously, there is a need to ground the efforts for ethical coercive e-government in a framework that the government does not control. The EU has demonstrated the power to regulate the privacy of citizens by demanding that websites should declare to users if they may upload files to that computer ('cookies'). EU regulation should be able to demand that governments that coerce e-government systems should have issued a set of principles of ethical e-government and the necessary institutional framework to maintain the principles.

7.2 Implications for research

There are two types of implications for e-government research in this study, namely regarding further *depth* and further *extension*. Coming from a critical research and participatory design stance, the implications for e-government research given here are grounded in the endeavor for increased emancipation and – following from that – less harm to public employees and citizens. More depth means that we need to know more about the practices of e-government and how it is operated; extension means that we need to explore new aspects of e-government, namely, what is concerned with e-government harm. Coercive e-government is 'out there' in real life, in few countries for now, but "more are expected to come" (European Commission, 2012). This study shows that e-government harm from coercive e-government exists. Current e-government research has little to offer to the exploration of e-government harm and less to the mitigation of e-government harm. See paper 1 for descriptions of current leading e-government research. This study calls for critical e-government research to unveil the harm of e-government, propose ethical frameworks that may guide e-government and explore the mechanisms of coercive e-government, see paper 5 and paper 7.

7.2.1 Deficiencies in existent e-government research

This study shows that e-government is perceived differently by different people in different situations and in different organizations. Technology can afford timeliness when a deadline is approaching to ensure that the citizen does not lose rights or is not fined. It can support flexible collaboration between citizens and State employees when both actors have the necessary digital communication capabilities. Some work tasks are easier and quicker to handle by staff thereby reducing the workload and providing enhanced flexibility may lead to enhanced productivity. The challenge for e-government research is that all the positive effects from this e-government initiative are happening alongside the negative effects that this study has revealed. The same e-government initiative is producing both positive and negative effects at the same time. Compare the very different statements about e-government in paper 6.

Vulnerable citizens – understood as the elderly, the beneficiaries, the sick etc. – citizens that depend in one way or another on support from society, may be affected negatively by DP.

It seems very clear that staff struggle with e-government and that it - in different ways - affects their perceived work life quality (paper 5). The perceived increased work load is related to interoperability issues and technology not being aligned with work processes. Furthermore, the substitution of physical letters with digital messages creates new problems because of privacy issues that prevent staff from giving citizens the necessary help. The feeling of not being able to provide sufficient support for citizens, affect staff negatively.

We have seen that the adoption of the e-government initiative varies amongst municipalities (paper 2). The variety of barriers to adoption may be handled in many different ways across organizations. Moreover, staff actively effects the adoption of the e-government initiative.

The DP infrastructure has been seen to vary according to specific configuration and interoperability decisions, which underlines the necessity to distinguish objective technology from enacted technology.

DP is an e-government initiative that has been imposed from national government onto local governments. Where government levels have power over other governments, it is necessary to include this relationship in the research.

These findings question the adequacy of e-government research that treats governments, citizens, employees, services and technologies as generic constructs detached from the situated context. To be able to understand the antecedents of e-government harm, it is necessary to examine the operations of e-government more in-depth – a recommendation that was made from critical scholars already in 2007 (Heeks & Bailur, 2007; Yildiz, 2007; Yıldız, 2012). While the vast majority of e-government research has been on citizen adoption, there has been limited research of staff adoption. This study proves the richness of data that studies of and with staff may produce, it proves how staff are key to internal e-government adoption (as stated by Ndou, 2004) and it has revealed valuable data about citizens' perception of e-government.

7.2.2 E-government harm ontology

E-government researchers have largely been concerned with the positive impacts of e-government and less with critical views on e-government; hence the negative impacts (paper 1). This means that understanding of the nature of e-government harm is very limited. I will even assert that e-government harm does not exist as a notion within the e-government community. As such, the task is to extend current e-government research with this new notion

This study has disclosed e-government harm as economic loss for organizations, anxiety and anger for some citizens in some situations, loss of benefits and rights together with increased

economic burdens for citizens, increased workload and decreased work life quality for staff and indicated an impact on public sector ethos towards less citizen support and increased mistrust towards citizens. This constitutes the initial ontology of e-government harm.

As part of the ontology, we need to also distinguish what e-government harm is *not*, i.e. to distinguish between harm that is caused by e-government and harm that primarily has non e-government antecedents. This view follows Mullen and Horner (2004) who suggest a model for ethical problems with e-government that distinguishes between e-government imposed ethical problems and ethical problems that arise independently of e-government. The harm may not stem from e-government but e-government must be the factor that triggers harm. Moreover, it is necessary to determine from which philosophical approach e-government harm can be understood. To what extent is e-government harm a state or impact that can be measured objectively from a positivist's viewpoint and to what extent is it a socially constructed state?

As e-government harm does not exist in the research community, scholars are not aware of its presence and less conscious about how to study the phenomenon. Accordingly, it is necessary to debate and explore the epistemology of e-government harm. This study has applied empirical studies, where the phenomenon has been explored from different levels (central government, local government, departmental, individual) and – most importantly – derived from situated actions in engagement with practitioners. Moreover, the study has given a voice to the people that have been affected. This study has been conducted as critical IS research and grounded on the philosophies behind participatory design and engaged scholarship. This approach has proved to be appropriate in the exploration of e-government harm.

Conceptual models are applied to highlight the major constructs within the research scope and the relations between the constructs. I have proposed a conceptual model that builds on the Technology enactment framework (Fountain, 2001) and how unanticipated outcomes are derived from the enacted technology. I intended to depict the antecedents to e-government harm in a similar way to how the enacting e-government success model (R. J. Gil-Garcia, 2012) depicts success. My suggested imposed e-government harm model highlights three principles. First, the model highlights the pivotal distinction between objective and enacted technology, which is the paramount point in the technology enactment framework, and is not significant in the success model. Secondly, the e-government institutional field is equally important as an antecedent for harm as the organizational and institutional forces. Thirdly, the 'outcome' of the model underlines the critical research perspective that e-government harm is imposed on people in different aspects. The conceptual model allows a critical view of e-government by focusing on the harm imposed by e-government and technology.

7.2.3 E-government harm epistemology

Critical IS research with its grounding in the search for emancipation, questioning taken-for-granted assumptions about technology determinism, and the primary focus on performance intent has the focus of people, thus constitutes an appropriate approach to exploring e-government harm. Critical e-government research is sparse (Heeks & Bailur, 2007; Myers & Klein, 2011) despite that e-government is seen by some scholars to reinforce power relations (A. Cordella & Iannacci, 2010; Coursey & Norris, 2008)

Which studies should critical e-government researchers participate in and which not? Should studies be designed exclusively to explore e-government harm? Efficiency goals may precede human goals, but we may discard the idea that governments intentionally exert e-government harm. Hence, e-government harm is something that happens unintentionally as technology is embedded in the government context and hereby becomes enacted technology that brings unforeseen outcomes (Fountain, 2001). Thus, e-government harm must be studied as situated

actions in an empirical setting. It follows that critical e-government researchers do not have their primary interest in the design of e-government artefacts (the objective technology). Studies should be concerned with the situated design-in-use situation, which would involve tailoring the objective technology (Bansler & Havn, 1994) and providing the necessary interoperability (Bannister & Connolly, 2012). E-government harm is done to people; citizens on one side, managers and staff in public institutions on the other. Thus, critical e-government studies may be based on the critical IS research approach that is concerned with people (Cecez-Kecmanovic, 2005).

Exploring the nature of e-government harm in designated studies will provide crucial initial knowledge of the phenomenon. However, studies of e-government harm must not lead to the establishment of a cult-like elite of well-meaning researchers out of touch with reality – and worse – out of reach of funding and influence. E-government harm researchers, hence, must strive to play a part in ‘regular’ e-government projects and studies to ensure funding opportunities, to ensure outreach and to be able to introduce and strengthen the ethical dimension of e-government initiatives. The ultimate goal of critical e-government research is to undermine its own *raison d’être*.

How are researchers to be engaged in critical e-government research? IS communities (including the e-government community) tend to be overly focused on the positive impacts of technology (Kim N. Andersen et al., 2010; Savoldelli et al., 2014). Maybe it would be feasible to bring in other research communities to treat e-government critically from the outside from a philosophical, ethical or participatory approach? Next; how e-government scholars may be engaged? A panel was held at ICIS 2006, called “Social Activism in IS Research: Making the World a Better Place?” (Desouza et al., 2007). The panel participants were asked to give answers to how IS research could support developing countries and how developing world practices could inform research and teaching. Contributions centered about 1) the role of the researcher, 2) the research approach needed and 3) how to raise awareness amongst scholars. A similar approach could be feasible for e-government harm within the e-government community: Critical research in e-government: Avoiding unintended harm focusing on 1) the obligation of the e-government scholar 2) critical research as a comprehensive approach and 3) what activities to engage e-government scholars in when exploring e-government harm.

Teaching activity is part of establishing a research field (Hans. J. Scholl, 2010a). Students are exposed to a variety of e-services at their university, e.g. enrolment, course selection, access to course resources, library services or even access to printers. Further, they have experienced public services concerned with student grants and loans. They have experienced the feelings associated with IT systems that do not meet their needs properly in a particular (serious) situation. Hence, students might find the critical e-government approach and the notion of e-government harm attractive to include in bachelor or masters studies. In a half day lecture at Roskilde University in a design course for second semester students, I used the following approach: the presentation of the e-government and the critical approach with live examples were given in the theory part, then the students had to prepare for the lecture by acquiring their EasyID, registering in DP and sending at least one digital post to their local government asking for something in particular. Further, before the lecture, they should have chosen three e-government services that they would evaluate during exercises. During exercises, groups of three applied think-aloud techniques while operating various e-government services. One group discovered that a necessary Java-update would not work on a Mac computer. Another group reported having seen a rat to the local government and found maps that could not be activated to mark the spot with the rat was found and worse, after having submitted various pieces of information and closed the service, they received an e-mail receipt revealing that if the rat was found *inside the house*, an e-mail should be sent to the local government and the e-service

should not be used. One group found that two girls could not register a marriage and another found the website for retrieving their criminal record resembled a site under construction or one that had been hacked – the site had been designed by the police themselves. Students were excited because they could relate the critical e-government studies to their everyday life.

7.2.4 E-government ethics and maintenance

Critical IS research requires an effort for transformative redefinition (H. J. Richardson & Howcroft, 2006). Limiting this study to only concluding on e-government harm would not be transformative redefinition. If harm is to be avoided, it is necessary to be able to assess whether a particular situation entails harm. This issue is detailed further in paper 7. Ethics are rules to judge something being morally right or wrong. There is a lack of scholarly scrutiny into e-government ethics (Roman, 2013). A further discussion on e-government ethics is necessary to bring forward the exploration of e-government harm. There is one fundamental question that must be raised, namely whether one subscribes to the teleological strand or the deontological strand. If this distinction is not made explicit, there is a danger that the teleological strand with its admittance to suffering of the few for the greater benefit of the many may prevail. My stance is clearly that universal values exist and may not be violated, not one person should suffer from e-government.

Further, critical e-government research cannot just arbitrarily choose between values but must rely on the ethics of the public sector. What or whose ethics should inform e-government from the choice of the constitution, the democratic decisions, the public interest, the needs of the citizenry or one's own virtue? First, e-government harm is imposed by a governmental body, thus, the civil servants' loyalty to the democratic decisions alone, would not be able to provide protection from e-government harm. On the contrary, the most prominent feature of e-government ethics may be to provide guidance to civil servants about when to be loyal to democratic decisions, and when to be loyal to 'other values' that democratic decisions or administration have come to violate, and actively reveal the impacts. Should the ethics be formulated as a set of attractable positive values that e-government initiatives should promote or – on the contrary – rather as values that e-government must not violate? The critical research values of emancipation and providing a voice for the weak – do they provide guidance for e-government practitioners? To civil servants, it might seem natural – thus not debated - that citizens may not 'suffer no hurt or damage', however, when competing goals exist, it might be necessary to highlight this value. This may also account for self-evident (or not?) codes as 'citizens' rights may not be violated by e-government and 'citizens' legal certainty may not be violated by e-government', however such statements should be detailed to be applicable by staff. The need for an e-government ethics that is practically applicable is obvious, the path to defining it, however, is not obvious.

A set of codes could be limited to high-level statements formalizing what may already be taken-for-granted such as 'e-government must not harm', which could be applied for different areas - for instance as found in this study – citizens, public employees, organizations and public sector ethos. Such high-level principles should be detailed in areas that have proven to be typical of producing harm. This study has shown that especially vulnerable citizens depending on public welfare may feel anxiety from coercive e-government. Principles that aim to protect the weak parties may also be applied and ensure that they can veto particular e-government initiatives.

The maintenance of a decided e-government ethics may be accomplished in various supplementary ways. Ethical codes of conduct have their advantages and disadvantages (Caza et al., 2004). They can never be exhaustive and must be supplemented by a regulatory government

independent authority with responsibility to treat e-government harm issues raised by citizens or staff. Furthermore, Ekhtor (2013) recommends control and transparency, and supra-national conventions that may commit governments to responsible e-government. There is a need for e-government scholars to explore these notions.

7.2.5 Coercive e-government changes the rules of the game

If a citizen knows that she is not motivated to currently logon to her DP to read messages from the public sector *and* she knows that there may be serious consequences if she does not see a digital post, she will properly avoid potential serious consequences (harm) by not registering to DP. Under a voluntary e-government regime, citizens can escape e-government harm by simply maintaining non-digital government services. Citizens cannot do that if e-government is coercive. Hence, e-government harm may be narrowly connected to coercive e-government. From this study, it is my claim that e-government harm from DP could have been avoided to a great extent if DP had been enacted differently, thus, e-government harm is connected to not only coercive e-government, but to the particular instantiation of the coercive e-government. However, there is no scholarly insight into the ontology and epistemology of coercive e-government, exactly as it is with e-government harm.

This study reveals a coercive e-government case, where central government has imposed coercive e-government onto citizens by legal means and onto lower levels of government (agencies and local governments) by economic punishment if they fail to comply. The rhetoric towards citizens has been harsh, and encourages mistrust from civil servants towards citizens. The philosophy follows the neoliberal approach that stresses self-responsibility and consequence (Mik-Meyer & Villardsen, 2012). For citizens, this means less assistance from civil servants due to privacy and security reasons, at the same time as stiff penalties if they do not comply. Enhanced citizen self-responsibility is followed by decreased public sector responsibility for taking care of the citizen. The approach from government to public institutions is the same. While national government provides the central e-government infrastructure, public institutions are themselves responsible for implementing the e-government strategy, which includes procuring the necessary technology to integrate with the central infrastructure from the market, training the public employees and ensuring the necessary internal interoperability. The e-government strategy is driven purely by performance goals. The particular public institution has little control over the provisions of e-government technologies from the market.

Attributes of coercive e-government that have been prevalent in this study are given in figure 50. With this framework, it may be possible to conduct comparative studies across countries of coercive e-government and compare the degree and type of associated e-government harm.

1. Control mechanisms (top-down/joint, degree of authority over the involved public institutions)
2. The balance of program complexity versus the actual resources to cope with this complexity
3. The degree of fragmentation, to what extent may the entire scope of the program be controlled
4. The means by which coercive e-government is imposed onto lower level government including consequences for not complying
5. The means by which coercive e-government is imposed onto citizens including the degree of self-responsibility and consequences for not complying
6. The character of the collaboration of the program with salient stakeholders (citizens, NGO's, staff trade unions, vendors organizations etc.), to what degree are they involved and in what stages
7. Safeguard mechanisms towards vulnerable citizens
8. Business case, transparency and availability
9. Effects evaluation (performance measures, quality measures (citizens and staff))
10. The degree of sensitivity to the potential impact on public sector ethos
11. To what degree does the program integrate alternative viewpoints (e.g. research, experiences from other countries)
12. The perceived degree of balance in the relationship between public sector and the citizen

Figure 50 Attributes of coercive e-government

One theme that has emerged during the study that relates to the coercive strategy - and may be more important to address than under a voluntary e-government regime – needs to be detailed further. Both staff and citizens are very conscious about the balance in the relationship between public sector and the citizen. The theme of balance covers several aspects.

Citizens have high demands towards the State under coercive e-government

Both staff and citizens are conscious about what citizens need to cope with, i.e. the requirements from the State compared to the performance of the State (or public sector as such). This is explicitly stated regarding the print situation. It is perceived as not right (or not fair) that the State demands that citizens possess the various capabilities to print a document when public sector cannot offer the citizens the opportunity to respond digitally. Staff attribute this imbalance to the pace of the change. Citizens are conscious about the imbalance of the demand for citizens to respond to digital post and the lack of the ability of public sector to answer citizens. This feeling was further nourished by other incidents when the Minister of Finance decided that not all public institutions needed to answer digital post from citizens even if it was stated by the government since 2010, when the DP address book was not updated, when public institutions did not know what DP was, and when the Digitization Agency expressed the view that there was nothing wrong with DP even if it allowed public institutions to change recipient/sender in historic messages, or when it was revealed that DP did not display the names of public institutions correctly.

Citizens want rights if they have to comply with coercive e-government

Secondly, staff and citizens express that it is not right that only the State has rights and the citizen has none but only has to comply. Citizens have no right to demand digital communication from public sector, citizens have no rights over their own data and have no alternative options to EasyID or DP (as for instance to connect to a CMS system with a secure e-mail instead of being forced to use the Citizen.dk access).

Joint collaboration and equal commitment is expected of all public institutions under coercive e-government

Staff are conscious about the very different commitment and performance of the range of public institutions, especially that distinct domains such as the police, the GPs, the State church and the courts who for 3 years refused to communicate through DP with local governments. One local government made a decision in 2012 (and more followed) to return all physical mail from other public institutions to sender, marking it with a stamp saying “the local government receives only digital post from public institutions”.

A high degree of preparation from the State is expected under coercive e-government

Staff find that the change had not been sufficiently prepared by the State due to legal uncertainty, amongst other things there was the prominent uncertainty about the validity of the digital signature compared to the physical signature and only after more than three years were the appropriate law changes issued.

High quality technology is expected under coercive e-government

Another very clear reaction from both citizens and staff is the expectation of high quality technology being available (flexibility, performance, accessibility etc.). This concerns the e-government readiness of the public sector that has been questioned. One may argue that delayed and immature IT systems that have not been sufficiently tested in context are nothing new. However, this study indicates that users are more critical towards systems maturity in a coercive context, which is positive in the sense that it stimulates public institutions to be more careful regarding development, test, implementation, configuration and operation of e-government systems.

Citizens expect immediate crisis management under coercive e-government

The study has revealed the sensitivity with only one access to DP (EasyID). The Ministry of Finance was not prepared for the situation where EasyID was down for four days in October 2013. The Digitization Agency had no alternative solution to access and showed limited or no understanding of the consequences of there being no access; the agency did not answer the question from media of, what citizens should do. When a coercive e-government initiative has been enforced onto citizens with potential personal consequences if citizens do not access their DP, there must accordingly be a requirement on the State. The requirement could be amongst other things, 1) a clear instruction to public institutions to how the consequences should be administered in a period, when citizens through no fault of their own do not have access to DP and 2) a guarantee to citizens that they will not bear any legal consequences in this period. The case revealed that the Tax Agency provided four independent access modes to the tax related systems that are accessed by citizens, amongst other a simple pin code access. It could be argued that the e-government strategy should include one common strategy to system access depending on common objective criteria across public institutions that offer e-government services.

Harsh rhetoric provokes citizens

The harsh rhetoric that accommodates the coercive strategy seem to have had an impact on how the strategy is perceived both in the perception of imbalance and unfairness and as an impact on individuals as citizens that need to access DP.

The balance of privacy and ease of use is pushed by coercive e-government

Tan et al. (2010) showed that the frequency of using e-government services had an influence on citizens' perception of service quality. Bélanger and Crossler (2011) found that people tend to have less concern revealing private information on the Internet and that there is limited scholarly focus on user efficiency in research of privacy issues. Hertzum et al. (2004) investigated different Internet banking systems and found that ease of use was hampered by security requirements. Further, they stated that the actual security level was lower due to users omitting security requirements. This study reveals that the EasyID is perceived as a barrier to DP due to it being difficult to maintain (Java) and difficult to use (the logon). Violations of security requirements were also found as a number of female staff carried their spouses EasyID code chart in their purse. Citizens have claimed that they want to decide privacy and security levels themselves. Why should the State define how risk averse citizens are? This is in line with K. V. Andersen and Henriksen (2006) that suggested a stage of e-government where the ownership of data is transferred to the citizen.

It has been very clear that it is the use of force that triggers this immense feeling of imbalance and that it evokes negative emotional reactions from citizens and staff, certainly affecting the citizens' trust of government and e-government, that has been found to be paramount for citizens' adoption of e-government (Bélanger & Carter, 2008; L. Carter & Belanger, 2005; Horst et al., 2007).

7.3 Limitations

Digital communication may be different from other e-government systems (Li & Feeney, 2014). This is certainly true in at least two aspects, namely frequency (communication systems may be used much more frequent) and scope (communication systems may cover a wide variety of users and situations). A system for enrolling children into day care will be accessed a few times in a lifetime and by citizens that share at least some characteristics. Digital communication, hence, may be more sensitive and more challenging for the public sector to succeed with. The results from this study, thus, may not fully apply to the entire e-government field as such.

The findings stem from a coercive e-government setting, which is not very common. What are the limitations in interpretation of the study into a non-coercive e-government setting? As already touched upon, voluntary e-government gives citizens the opportunity to escape e-government harm. However, this study may inform strategy discussions in countries with voluntary e-government that may consider a coercive strategy.

This study is performed in Denmark and grounded in the unique setting of the Danish e-government. What are the limitations of the relevance for other countries with other characteristics? Denmark is regarded as one of the top world performers of e-government and citizen e-readiness. Further, a core data infrastructure has existed for 50 years; citizens have infinite trust in public institutions and generally have no restrictions about sharing personal data with public institutions. In some cultures, the Danish e-government strategy would be unimaginable and not compatible with existing values. For environments that are very different from the Danish setting, this study may have limited value.

This study only includes a few statements from citizens and there has been no involvement with citizens. Nevertheless, a major part of the results relates to the negative impact on citizens. How reliable are statements about citizens when citizens have not been involved? This would be a true limitation. On the other hand, how to involve citizens and representational issues has proved to be a challenge in e-government studies. Further, sensitivity issues should be included such as dealing with less able citizens. However, it needs to be confirmed to what de-

gree staffperceptions of citizens' experiences is a proxy for citizens' perception. It was clear, however, that staff includes both a staff and a citizen view, since staff are also citizens.

7.4 Future work

Besides the further examination of coercive e-government implementations strategy, e-government harm and e-government ethics, this study has raised other possible research areas.

7.4.1 Certified Mail Systems in e-government

Some governments and private companies have seen a great potential for CMSs and a number of these are operating throughout Europe (Mates et al., 2013). The European Commission has also launched a program to examine cross country barriers and appropriate CMS standards from a technical approach (Tauber & Rössler, 2010). Spitzberg (2006) claims that computer mediated communication is far from trivial due to the dependence of various competency requirements related to motivation, skill, knowledge, the message, the channel and further contextual factors. Furthermore, there have been scholarly disputes about the ability to comprehend a digital displayed text compared to a text in a book or a paper (Mangen et al., 2013; Margolin et al., 2013). Finally, Li and Feeney (2014) have highlighted the differences between e-government as public services and communication systems.

There may be a great potential in countries that are governed by a similar developed document based bureaucracy for digital communication, thus a potential political pressure to include this transformation in the national e-government strategy. At the same time, there are obvious challenges to this intent. A conceptual study that combines technical and personal attributes of these systems would provide necessary insight due to further understanding of the interplay and interdependencies.

7.4.2 Easy to use eID

Accessibility to e-government services through eID has an immense significance on the citizens' perception of the e-government service; hence the design of the eID is of utmost importance. The Danish EasyID is not perceived as easy to use. The significance of different design choices for different citizens must be examined. A comparative study is possible when the next version of EasyID is launched, presumably in 2016.

7.4.3 The reasons for local government DP differences

A thorough qualitative examination of the reasons for the huge differences in DP adoption level and DP exemption level amongst the local governments may generate further understanding about the 'black box' of e-government.

7.4.4 The citizen' right to own data

It is apparent that there is a need to understand how to meet the citizens' needs for their own control of their data. This relates to some citizens' having a more relaxed attitude to privacy and security. This calls for e-government models that allow a differentiated view on data and may follow from a more personalized approach to e-government.

8 Self-reflexivity

The researcher is biased in his choices of RQ, scope, methods of data collection and analysis, and structure of discussion; there is no value-free research or pure, objective fact, “[t]he researcher’s biography, culture, professional training and membership of a scientific community influence the ontological and epistemological assumptions adopted.” (Blaikie, 2007, p. 43). Non-critical IS research is shaped by and reinforces existing power structures and interests due to the belief in objective, value-free knowledge (Howcroft & Trauth, 2005). In doing so, the researcher might be involved in “mechanisms that promote suffering” Kvasny (2004). The critical researcher, by exerting self-reflexivity, may avoid this caveat (Cecez-Kecmanovic, 2005). This section deals with the self-reflexivity that informed the shaping of my research during the 3 years of this PhD-study. I may have started my PhD study in a way that could be seen as promoting “mechanisms that promote suffering”. By changing my research approach, I may have avoided what Van de Ven warns about, namely too hastily formulation of the research problem that could make important dimensions of the problem go undetected (Van de Ven, 2007).

I have a background in engineering and have been working with technology and business processes within public administration as a project manager and manager for 25 years. My stance is that technology can and must be designed and implemented to support people, but I have seldom questioned, whether more technology was better or even, if technology was appropriate. Changing from industry to academia and based in Computer Science, I have been very focused on adapting to being a ‘real’ IS researcher aiming for IS community recognition. During my first year, I discovered the ‘digital divide’ literature, which I found somewhat pathetic (Should lack of technology access for the few prevent the many benefitting?) and feminist literature, which I simply didn’t believe existed (it was just so ‘old school 1970es’, how could the existence of so-called feminist’ values contribute to anything?).

Initially, my study was about how to realize effects from DP, applying a PD socio-technical approach based on collaboration with practitioners. During the 3 years, my approach and understanding of the e-government field has changed. The evolution of the key questions that I have asked participants during the study reflects the changes in my focus and perception, see table 25.

Table 25 Evolvement of research focus during my study

Case	Published	Key question to staff
CCS1, 2012	-	What would make you use DP even more?
ACS1, 2013	Paper 5	What is your perception of DP?
AJC, 2014	-	Why do you not use DP?
CSTU, 2014	Paper 6	Describe situations, where you have chosen not to use DP due to concern for the citizen

In the Delphi study (CCS1), the vast majority of participants (local government staff) agreed that significant barriers to using DP constituted vulnerable citizens, lack of IT skills and computer etc. (exactly the same as seen in ACS1 (paper 5) and CSTU (paper 6)). At that time, however, I discarded these answers because they didn’t follow the prerequisites of being something that staff had an influence on, thus, they didn’t follow my instructions. I didn’t acknowledge the message that DP maybe was not appropriate. During a group interview in CCS2, I suddenly realized after almost two hours, that I had totally misunderstood the entire team. I thought they were using DP, hence could be a role model for other teams. Instead, they had discovered how to use DP to omit digital post and exclusively send physical letters. I didn’t believe it. Transaction data for the entire municipality showed that more than 20% of DP transactions were

‘forced’ physical letters, consciously or from sloppiness. When I disclosed this to the management, it became a big issue and a BI system was designed, built and implemented, solely to disclose to managers when staff omitted DP to send physical letters. When I presented my results at various conferences, workshops etc., I almost taunted this ‘naughty’ team that obstructed the DP project. At one presentation for private sector CIOs, they were obviously shocked about this and called it civil servant disobedience, to which I agreed.

After one year, the overall municipal percentage of DP messages that was forced to physical letters had not dropped. I was beginning to wonder about it and suggested to the CEO that I examined the background further, for instance by a survey of staff that avoided DP. He never commented on this, but from my informants within the municipality, I found out that the next morning, he had demanded explanations and suggestions of remedies from the involved managers. Further, one year after, by coincidence, I discovered that the ‘disobedient’ team still did only send physical letters. No attempt was made to investigate *why* staff avoided DP.

Starting in a new municipality, I decided to openly and actively investigate, how staff perceived DP by doing two focus groups (ACS1). I consciously kept a low profile because participants associated me with management and they knew what the managers wanted to hear – or not hear. After a short while, participants forgot about me and talked like ‘being in the canteen’ (as one participant remarked in the debriefing) and all of their perceptions of negative impacts from DP and on their own working life were revealed, see paper 5. From CCS1 and CCS2, I had also heard about technology that didn’t work and that they spent more time using DP than they did with physical letters. At that time, I attributed it to anticipated resistance to change. In the focus groups, the participants revealed how they had lost the joy of serving citizens, because – with DP – they were not able to give the citizens the service that they wanted and, as they perceived, citizens needed.

Having worked with administrative staff in two municipalities, I moved to an unemployment center and conducted a field study from an observational approach in the use of DP, while municipality project managers implemented it. Even though staff at the jobcenter didn’t know me, they had heard about me. I worked for the CIO and could make them use DP. At the job center the staff worked with unemployed citizens that are also mentally ill, disabled or suffer from addiction etc., i.e. citizens that suffer from more than being unemployed. I was met with hostility by some managers and some staff. They seemed seriously affected and engaged when they told me about how DP would be counterproductive in their social habitation work with vulnerable citizens. Some employees plainly told me (some even aggressively) that they refused to use DP. Some managers told me how this would burden staff further, that staff already had enough to worry about because they had too many vulnerable citizens for too few employees. One manager gave me nine particular tasks that he prioritized more than enforcing DP onto his staff. It was very clear that their close contact with less able citizens had a great influence on their negative perception of DP – and apparently for good reasons. At the same time, the Digitization Agency promoted a national campaign for local governments to compete in getting citizens registered in DP. The competition was possible because data about DP coverage for every local government was published on the Digitization Agency website every Monday, see figure 51 from a design, I had made and implemented as employee in Statistics Denmark, before my PhD.

LevPeriode	201348		
Age	(Alle)		
Percentage		DP	
Region	Municipality	Not registered	Registered
84 Region Hovedstaden	101 København	68,1%	31,9%
	147 Frederiksberg	69,8%	30,2%
	151 Ballerup	70,7%	29,3%
	153 Brøndby	71,7%	28,3%
	155 Dragør	71,9%	28,1%
	157 Gentofte	73,7%	26,3%
	159 Gladsaxe	70,4%	29,6%
	161 Glostrup	73,6%	26,4%
	163 Herlev	72,4%	27,6%
	165 Albertslund	71,2%	28,8%
	167 Hvidovre	71,0%	29,0%
	175 Rødovre	73,6%	26,4%

Figure 51 Weekly assessment of Digital Post for all local governments (extract)

I had second thoughts when management in CCS wanted to use my research to reveal staff that didn't follow orders. It affected me, when one of the participants in one focus group (one of the most critical of DP) was fired, due to reduced funding because of the anticipated cost reductions from DP. Staff worked hard and were loyal to compensate for badly designed and poorly implemented technology, they fought to give citizens the needed assistance – and they risked getting fired. I found further ethical dilemmas, which are reported in paper 3. Further, the Danish government decided to make DP mandatory in a very rigid and cynical way with a minimum of responsiveness to criticism of the poorly enacted DP initiative. The government used my own design (the weekly assessment) to make local governments 'fight' for biggest possible digitization – while efforts on the weak and worried citizens were narrowed down to 'teach them to be digital'. All these experiences pushed me further to the critical stance.

After the focus groups, I presented the results to the managers for validation. One manager could not recognize the results and said that staff didn't express negative perceptions of DP. I contacted the trade union for clerical staff (which organizes 72% of the workforce) to hear if they could recognize the results from the two municipalities. They informed me that they – unsolicited – received many phone calls and e-mails from their members, detailing how DP was a bad service for citizens. We decided to do a survey of their members and directly ask if they found whether DP had changed the service towards citizens, positively or negatively, or if they even avoided using DP out of concern for the citizen. This was the first time I directly addressed the negative impact of DP. The result as reported in paper 6 was overwhelming. 82% of respondents were in favor of DP, but when it came to the particular incidents, half reported incidents of either negative service change or avoidance. I had then begun to believe that avoidance of DP was not just a matter of resistance to change or that it was not just what I in paper 5 titled a 'silent protest from staff' from 14 public employees but that it was a general feeling throughout Danish local governments and properly¹¹ to an extent that was surprising and should be taken seriously by practitioners if they worry about cost reductions from e-government.

¹¹ We did not design our survey to be representative for clerical staff in Denmark, but only those that found that DP had made a change in citizen service

In May 2013, I sent a digital post to 123 public institutions, pretending to be a citizen. This was the start of a nearly one year long endeavor with those in power of DP. We revealed with this study, time and time again, the insufficient implementation of DP and lack of responsiveness to deficiencies (Berger & Andersen, 2013a). Before this study, I thought that revealing inefficiencies was sufficient and ‘somebody’ in charge of ameliorating would be grateful, take over and fix it. Two examples are given from the citizens’ perspective and the staff’s perspective. On the citizen side, the wrong public institution recipient/sender in a digital post when organized in hierarchies, which we informed the Digitization Agency about in August 2013 but they only reluctantly acknowledged a year later, when it was addressed by the Ombudsman. On staff’s side, the reluctance of the Digitization Agency to take responsibility for the DP implementation in the various public institutions even though there were clear deficiencies. These results were published in the media (Berger & Andersen, 2013a, 2013b, 2013c) and we had sent our research paper for comment to the Digitization Agency (paper 2). Together with my two research colleagues, we were summoned to the Digitization Agency to account for our research. One of us feared that this could affect our academic careers. We accounted for our methods and findings and were asked to let the Digitization Agency see our publications before publishing. These experiences made me believe that it was not enough to disclose. I feel that I – with my ‘power of knowledge’ have to directly address the negative impacts from e-government initiatives, “with the conviction not only that it is legitimate but that it is indeed an obligation for a researcher to actively engage in the transformation of IS practices that will contribute to a more democratic workplace [or society] with greater degree of autonomy and human agency, and ultimately lead to less repressive and more equitable social relations” (Cecez-Kecmanovic, 2005).

So, how did the research community react? In my first submitted (but rejected) paper to an IS conference, where I argued that – amongst other barriers - incompatibility of staff values with those represented in the technology affected adoption negatively (citing Rogers, 2003), one of the reviewers declared that “this is not new”. I addressed more directly the negative impact in later work presented at IS conferences (paper 2, paper 5), which initiated engaged discussions at the presentations. One scholar claimed that many citizens also benefit greatly from e-government initiatives and that maybe it was only a few citizens that were negatively impacted. This comment made me realize that we had different ethical grounds. My opponent adhered to the teleological ethics (the overall good of an action may legitimize suffering of the few) and I adhered to the deontological ethics (a universal ethics exist). Further, I noticed from the latter presentation that the discussion was blurred, that scholars did not feel familiar with the harm of e-government. In our e-government literature review of leading e-government articles from 2001 to 2010 (paper 1), we only found few critical e-government studies, which is in line with other reviews. But, searching directly for harm, negative impact etc. revealed limited results, the notion had no name, hence it is difficult to address and develop. I do not only consider it *my* obligation to generate and disclose scholarly knowledge about harm from e-government, but as a potential obligation to the e-government community, subsequently to the IS and Public Administration communities. Given my acquired knowledge, I had to engage other scholars. With my paper 7, I addressed the need to establish e-government harm as a notion; together with ontology and epistemology of e-government harm and the necessary ethics that e-government must be grounded in. The paper was presented at an e-government workshop with 30 participants. After presentation, there was a comment that we should not forget all the good things about e-government. Another comment from two senior scholars claimed that this was not new and that IS researchers had been dealing with that for decades. During the presentation, one scholar had noticed that no other papers in the workshop used the notion “e-government harm”, which made him comment that there was no support for this work: “We already address this, but just call it ‘problem’ or the like”, he noted. However, does “problem

or the like” pinpoint the essence of e-government harm? I think not. I think that this is one of the misunderstandings that follow from critical IS research. The bases of research are exactly to be ‘critical’ and from this point, one can argue that we as scholars have been critical of e-government since before it originated as a notion. However, ‘critical’ in ‘critical IS research’ is to be *socially critical*, take a moral stand relating to the use and misuse of IT maintaining oppressive structures in organizations and society (Cecez-Kecmanovic, 2011).

It is not that I have ‘seen the light’; I still believe that rationality has a great part to play realizing effects from e-government. However, I have become more open to other views of technology, both that it is not everyone that wants (Hanson, 2013) or needs (Hakkarainen, 2012) to be on-line all the time and I might even examine whether feminist studies could contribute to advance e-government harm studies – as suggested by a participant at the latter workshop.

9 Conclusion

In my PhD study, I have examined the Danish Digital Post e-government initiative - digital communication between public sector and citizens. Digital Post was launched by the Danish government in 2010 and when only one of five citizens had joined voluntarily by the beginning of 2012, the Danish government made it mandatory for citizens to receive digital communication from public institutions as of November 2014. When I started my PhD in January 2012, the focus of my study was on how local governments could realize benefits from Digital Post. From my first empirical study in a local government citizen center, it became very clear that clerical staff were not entirely positive about Digital Post. In fact, they found negative impacts from Digital Post on their own work situation and for some citizens. This pattern was confirmed by empirical studies in another local government and as my evaluation of economic impacts of Digital Post revealed that local governments lost money on Digital Post, I became curious about the negative impacts of Digital Post, especially, because e-government research is primarily occupied with positive impacts from e-government. In this study, thus, I have addressed the research question of why Digital Post in local governments is perceived as harmful, how this could have been avoided and how it can be mitigated. One contribution of this study is - exactly - to establish a new notion of *e-government harm* as something tangible that exists out there in real life.

My stance is that we as e-government researchers have an obligation to explore and reveal cases where technology has a negative impact on people and society as such. Hence, this research was conducted as critical IS research, defying technological determinism and pursuing emancipation for the weak stakeholders of e-government, being staff and citizens. E-government harm has been explored from eight different empirical settings, applying different research perspectives and purposes of engaged scholarship from different levels (individual, local government and national). Deep insight from work practices through genuine collaboration with practitioners was combined with disclosure of the critical findings in public media to stimulate reflexivity and change. The vantage point was e-government research and ethics, and the analysis drew upon institutional theory to explain how rules, norms and cultural beliefs – especially from the e-government institutional field, including the coercive e-government strategy – led to enacted Digital Post technology which shaped the unexpected negative outcomes – the e-government harm. The study did only to a limited degree directly involve citizens, however, one should bear in mind that public sector employees are also citizens and further, operational staff have a very clear perception of ‘their’ citizens.

The empirical findings throughout the entire study showed consistently that Digital Post is perceived both positively and negatively depending on the situation, i.e. to what extent the actor with her skills, motivation and knowledge can cope with technology, content of the communication, the co-actors and other contextual factors. The study revealed in tangible ways how Digital Post was able to harm especially vulnerable citizens with less skill and motivation (for instance by loss of welfare benefits) and staff (for instance by increased workload). One part of the study - a nationwide survey of local governments’ clerical staff - proved that 26% of the respondents reported negative changes with Digital Post towards citizens – and 21% reported cases where they had omitted use of Digital Post because they found it a *too poor service*. In 2014, an average of 80.000 potential digital posts has been sent as physical mail by staff every month. Further, it was revealed how Digital Post led to a financial deficit in local governments in both 2013 and 2014 – a deficit that would have to be balanced by staff layoffs or increased taxes. More seriously, maybe, is the impact on public sector ethos. The study revealed both growing alienation – where staff openly responded that they were happy with their performance towards the citizen, even though the citizen had not received the service – and indica-

tions of mistrust from staff to citizens in the situation where citizens due to no access to computers applied for exemption from coercive Digital Post.

Digital Post was perceived as far too complex both from a citizen's view (for instance due to logon and computer derived skills), an operational staff view (lack of interoperability and lack of alignment with work processes) and from organizational view, both technologically and regarding change management. The study revealed how the necessary supporting technologies were only emerging 3-4 years after Digital Post was launched, how it was based on poor design decisions, poor support from and coordination with major parts of the public sector and lack of overall coordination across all the public institutions that are impacted. From a project perspective, Digital Post is characterized by great complexity – for instance, spanning all levels and domains of public sector, being based on novel technology, a high level of technical complexity, is being implemented while in operation, affecting both public institutions, staff and citizens directly together with a tight time schedule that leaves no room for learning and adapting. The issued regulatory framework and agreements have been formulated and translated very rigidly by the Ministry of Finance and the institutional field as such; the implementation strategy, technology and design choices, scope, time or the coercive approach have not been questioned or adjusted, but constantly and eagerly defended from the conviction that people have to adapt to technology. Only one serious design flaw, to base the technology on Java was abandoned - after four years.

The coercive strategy has succeeded – from an e-government efficiency view – the number of yearly digital posts has increased from 7 Million (2011) to 32 Million (2014) and has led to cost reductions, mainly because they were forced on public institutions. The study, however, reveals how staff and citizens are emotionally affected by the coercive strategy and the enactment. 82% of respondents were initially in favor of e-government. The delicate perceived balance between demands and rights for the citizen and demands and rights for the State may have been shifted and created a negative perception of this particular e-government enactment. There is a clear feeling of imbalance between the need for citizens to receive digital post, but citizens cannot demand to receive digital post. Further, citizens were forced to join Digital Post at the decided date while public institutions lag behind in both receiving and answering digital posts because they are not ready. Finally, the severe consequences for citizens if they don't comply, but there are no consequences for public institutions. The rigid exemption process, where the elderly had to personally attend the town hall to apply for exemption, threatened with fines or imprisonment if they had access to computer and applied for exemption, was perceived as inhumane.

The coercive e-government strategy has clearly harmed citizens, staff, organizations and the public sector ethos and could have been avoided by relatively simple means. Digital Post has been a project with shared responsibility and no overall steering committee. Further, the project owner (the State) receives the benefits, while the many public institutions – that have implement the other half of the infrastructure – have no incentives. Management of this kind of project needs to be very rigid to avoid failure. Digital Post should have had a governance program and a steering committee with democratic surplus and openness. It should have been broken down into smaller steps with less risk, for instance starting with internal local government communication, internal public sector communication, then government to business and then government to citizens. Complexity should have been reduced by reducing functionality to one-way communication, reducing integration options and standardizing configuration of mailboxes and organizational integration. The end-to-end communication flow should have been tested thoroughly with a few vendors and only one version of the entire architecture should initially have been promoted. Further, a greater degree of agility and genuine involvement of practitioners in design and test would have been appropriate to avoid e-government harm.

From a deontological ethical strand, e-government should not in any way be harmful to any individuals, directly or indirectly. To ensure that no further harm is done in Denmark by coercive e-government, I suggest a stop to further national e-government strategies that emerge from the Digitization Agency and the Ministry of Finance. Instead, the citizens must spend time defining the ethics we want to govern our relations to the public sector, taking into account how we *don't* want it to evolve. An important question is in what situations and for whom, we will rely on e-government and in what situations we won't. An agreed-upon responsible e-government ethics supported by an institutional framework to maintain this ethics must protect citizens, staff, organizations and the public sector ethos against e-government harm. As part of the supporting institutional framework, it will be necessary to protect citizens from nationally imposed e-government harm by supra-national conventions (EU). With the necessary protective responsible e-government ethics in place and the supportive institutional framework, it will be possible for the government to consider future e-government strategies. If the coercive e-government strategy continues like this study has showed, it may have several serious implications, which includes both the harmful treatment to individual citizens, reduced work quality for civil servants (that may even protest by simply not using the technology) and economic loss to organizations (that ultimately must impact on staff and/or citizens) and further, a less supportive and protective public sector towards citizens.

This study has several important contributions to e-government research. Generally, it has been shown that e-government is complex, as stated by many scholars. E-government research needs to be more nuanced in the treatment of vital notions as government, citizen and service, and include employees as actors that facilitate e-government. In this study, neither citizens nor staff had their focus on the particular Digital Post application. Actually, the offered functionalities, security, user-interfaces, accessibility etc. have had surprisingly little attention. It has been the enacted technology that has had the great impact, including the eID solution to logon, choice of sensitive data as ID, the lack of information that was received in the alert message, the lack of integration to citizens' own e-mail account, the complexity of maintaining the computer and the anxiety that grows from the severe consequences of not complying with the law on the citizens' side. On staff's side, it has been the lack of interoperability with the multitude of systems that are involved in communications with citizens; that staff feel that they cannot any longer assist the vulnerable citizens because of sensitive login data. In various situations, it's simply the lack of sharability of the digital message compared with the physical letter that is disruptive. E-government scholars may need to address a range of dependent technical, social and human aspects in order to deepen the understanding of what affects e-government – the particular e-government technology is the least of the challenges. E-government adoption has been preoccupied with citizens' adoption; however, this study showed that staff adoption of e-government must not be neglected by scholars; staff's perception of the service that they provide for citizens was shown to have a serious moderating effect on adoption.

The most valuable contribution of the study is the recognition of e-government harm as a plausible consequence of coercive e-government. This has wider implications for e-government researchers. E-government harm does not exist as a current research topic, nor does coercive e-government. Governments are taking up coercive e-government and this study proves that it is an effective way to boost e-government, thus more governments will undoubtedly follow. Two citations from e-government literature will be given here as a mirror of the research field, first on the nature of e-government: "Governments cannot actively stimulate or even force usage to a certain IT system" (Axelsson & Melin, 2012) and on mandatory e-government about compatibility with citizens' needs: "After all, government services are designed to make everyday life easier and better" (Chan et al., 2010). As long as such beliefs are dominant in e-government research, scholars will be blind to the existence of coercive e-government and e-government

harm. I have suggested a conceptual model to illustrate how enacted technology together with the e-government institutional field, the organizational and institutional forces may produce e-government harm to citizens, staff, organizations and public sector ethos. I have suggested specific elements and types of mechanisms that may be included in a responsible e-government ethics. Further, I have illustrated and argued for critical IS research as an appropriate methodology to explore e-government harm. E-government scholars need to elaborate on the antecedents for e-government harm, including coercive e-government and further investigate the ontology and epistemology of coercive e-government, e-government harm and the responsible e-government ethics that may prevent from e-government harm. E-government scholars have an obligation to work for a better society within their research field. I urgently call for engaged and critical e-government scholars that will assist governments and citizens benefit from e-government in a way such as it is not perceived as harmful.

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PART II RESEARCH PAPERS

Paper 1

Madsen, Christian Østergaard, Berger, Jesper B., & Phythian, Mick. (2014). *The Development in Leading e-Government Articles 2001-2010: Definitions, Perspectives, Scope, Research Philosophies, Methods and Recommendations: An Update of Heeks and Bailur*. Paper presented at the 13th IFIP WG 8.5 International Conference, EGOV 2014, Dublin, Ireland, September 1-3, 2014. Proceedings.

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 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.

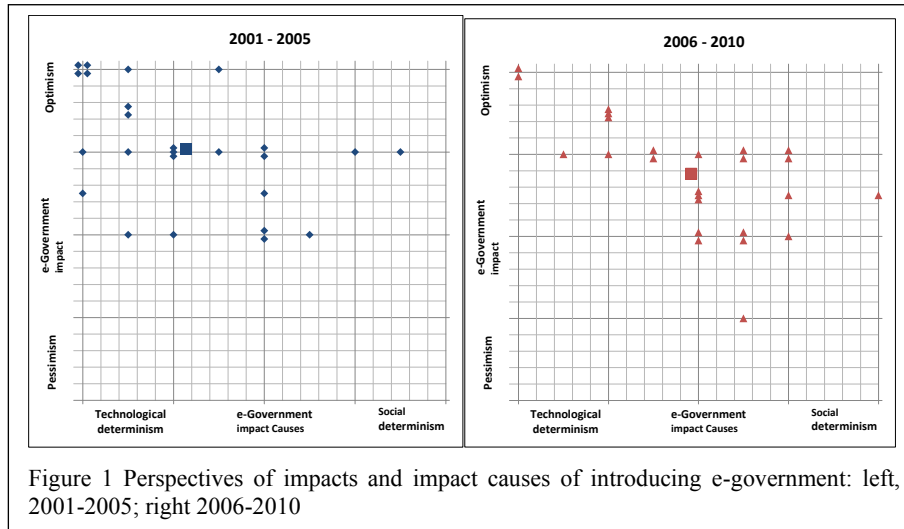


Figure 1 Perspectives of impacts and impact causes of introducing e-government: left, 2001-2005; right 2006-2010

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 Tech dem, 3 Socio - Technical, 2 Slightly soc dem, 1 Social determinism
3	Have adoption/implementation been used as explanation for missing impact from e-Government?
	1 Yes, 2 No, 3 na
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 are discussed?
	1 Managerial, 2 Consultatory/e-Democracy, 3 na
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 na
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 na
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 na
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 na
19	Are questions, constructs etc. presented?
	1 Yes, 2 No, 3 na
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 na
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

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ADOPTION PATTERNS FOR THE DIGITAL POST SYSTEM BY DANISH MUNICIPALITIES AND CITIZENS

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Abstract

The value of e-government, services to citizens by public institutions through the internet, is dependent on the mutual adoption of e-government by both the public institution and the citizens. This paper describes a longitudinal study of e-government adoption by municipalities and citizens in Denmark. We studied the e-government initiative Digital Post – encrypted digital communication between municipalities and citizens. Over the three-year adoption period, we found four adoption patterns among municipalities, characterized by a slow, late, gradual or early increase in the use of Digital Post. The adoption patterns among citizens were less distinct. We calculated the realized savings to only 20% of the anticipated savings, leading to a deficit of nearly €5 million in 2013. Municipal funding was reduced according to the anticipated savings. In addition, the variation in adoption by municipal staff explained much more of the variation in the deficit than the variation in adoption by citizens did. We wish to draw attention to the overly optimistic expectations of savings from e-government and to a need for further research into the governmental processes of e-government.

Keywords: adoption patterns, diffusion, e-government, longitudinal study, local government, municipality, benefits.

1 Introduction

Government institutions at central and municipal levels have long been introducing information systems to become more efficient and provide better service to citizens. Previously, such systems focused mainly on supporting processes internal to the government institutions and included systems for document management (Hertzum, 1995), geographical information (Frøkjær & Korsbæk, 1997), and collaboration support (Pipek & Wulf, 1999). However, with the widespread diffusion of the Internet, part of the focus has shifted to e-government, which is understood as public digital services for citizens through the internet. The realization of benefits from e-government depends on the adoption within government institutions as well as by citizens. This dual dependence has proved a challenge for at least two reasons. First, benefits from internal governmental systems have in many cases failed to materialize or they have been much smaller than expected (Goldfinch, 2007; Northrop, Kraemer, Dunkle, & King, 1990), even though these systems are introduced within an organizational structure with the possibility of mandating their use. Second, citizens adopt, or hesitate to adopt, e-government systems for reasons that may differ from those of government and the means for mandating citizen usage of the systems are weak, politically charged, or both.

In this study we investigate the adoption of the e-government system Digital Post by municipal staff and citizens in Denmark. Digital Post is a system for encrypting and sending digital letters between municipalities and citizens without the need for email addresses (which may change over time). The major incentive for municipalities to adopt Digital Post is the ensuing reduction in postal costs when digital letters replace physical letters. This incentive is being enforced by a cut in municipal budgets corresponding to the estimated savings. The major incentive for citizens to adopt Digital Post is easier management of their correspondence with their municipality and other public institutions because all

the correspondence is in one place and remains accessible across changes in citizens' address, email provider, and so forth.

The aim of this paper is to analyze how the adoption of Digital Post has evolved from when it was launched in June 2010 until September 2013 in relation to the anticipated adoption and effects. Specifically, we will analyze the degree and pattern of adoption by the municipal staff and the citizens in Denmark's 98 municipalities. We will also relate the adoption pattern of municipal staff to that of citizens to better understand this critical element in the success of e-government. Our analyses are based on monthly usage data for Digital Post, monthly data about the percentage of citizens registered to receive communication from their municipality in digital form, and the agreement between the national government and the municipalities detailing the business case for Digital Post. We contextualize the degree of Digital Post use by comparing the number of mails sent through Digital Post to the total number of digital and physical letters sent from municipalities to citizens. This supplementary analysis involves four municipalities.

2 Related Work

Rogers (2003, p. 21) defines adoption as the "decision to make full use of an innovation as the best course of action available". The emphasis on full use has been contested by others, who argue for including partial adoption as an important and frequent type of adoption (e.g., Jasperson, Carter, & Zmud, 2005; Jeyaraj & Sabherwal, 2008). In the following section, adoption includes both full and partial adoption.

2.1 Individual adoption

An individual's decision about whether to adopt an innovation depends on a range of factors. It has been studied from many perspectives, including reasoned action (Fishbein & Ajzen, 1975), task-technology fit (Goodhue & Thompson, 1995), technology acceptance (Davis, 1989), and the diffusion of innovations (Rogers, 2003). The factors studied differ across the perspectives but are mainly among those available to the adopter prior to becoming a (regular) user of the innovation. A unified view of much of the previous work has been presented by Venkatesh, Morris, Davis, and Davis (2003) who provide evidence for the influence of four factors on the adoption decision:

Performance expectancy is 'the degree to which an individual believes that using the system will help him or her attain gains in job performance' (Venkatesh et al., 2003, p. 447). This includes, among others, perceived usefulness (from Davis, 1989) and relative advantage (from Rogers, 2003), which have been the strongest predictors of adoption in previous studies. In the unified model, performance expectancy has, likewise, been found to influence adoption.

Effort expectancy is 'the degree of ease associated with the use of the system' (Venkatesh et al., 2003, p. 450). This includes, among others, perceived ease of use (from Davis, 1989), which has been found to influence adoption directly as well as indirectly. The indirect influence is mediated by perceived usefulness, indicating that an easier-to-use system is perceived as more useful. In the unified model, effort expectancy has, likewise, been found to influence adoption.

Social influence is 'the degree to which an individual perceives that important others believe he or she should use the new system' (Venkatesh et al., 2003, p. 451). This includes, among others, subjective norm (from Fishbein & Ajzen, 1975). In the unified model social influence has been found to affect adoption when use is mandated. The effect of mandated use is noteworthy in relation to e-government because adoption is often mandatory for governmental staff but rarely for the citizens.

Facilitating conditions is 'the degree to which an individual believes that an organizational or technical infrastructure exists to support the use of the system' (Venkatesh et al., 2003, p. 453). This includes, among others, compatibility (from Goodhue & Thompson, 1995; Rogers, 2003). In the

unified model, facilitating conditions have only been found to influence adoption for older people who are experienced in the use of a system.

While the four factors may collectively explain as much as 70% of the variation in individuals' intention to adopt systems (Venkatesh et al., 2003), they reveal little about how much *time* individuals need to gain knowledge about a system and form an attitude toward it before they make the adoption decision. This temporal aspect of adoption depends to a considerable extent on characteristics of the adopter and has led to the grouping of people into adopter categories such as innovators, early adopters, early majority, late majority, and laggards (Rogers, 2003). These categories have been found to depend on people's age, education, gender, income, self-efficacy, and other demographic and psychological variables (e.g., Lin, 1998; Martinez, Polo, & Flavián, 1998; Zayim, Yildirim, & Saka, 2006).

The temporal aspect of adoption also depends on the concept of critical mass, which is particularly important to the adoption of systems aimed at supporting communication and coordination (Markus, 1987). For such technologies, of which Digital Post is an example, there is little incentive to be among the first to adopt because the benefits of adoption are dependent on many others also adopting. Rather, there is an incentive to delay adoption until a sufficient number of others have already adopted. The critical mass is the tipping point between these two mechanisms. Before critical mass is achieved, adoption is at risk of never taking off; after critical mass has been achieved, adoption becomes self-sustaining and accelerates. Markus (1987) argues that for communication and coordination technologies there are only two stable states of adoption: all or nothing. Any intermediate state is unstable because the need to communicate and coordinate by other means entails maintaining the functionality necessary for these alternative means to function and possibly take off.

2.2 Organizational adoption

Governmental staff's adoption of e-government systems occurs, contrary to that of citizens, in an organizational context. The defining characteristic of organizational adoption is that it involves multiple adoption decisions. Gallivan (2001) distinguishes between a primary adoption decision by management and secondary adoption by the individual employees. This distinction emphasizes, as earlier pointed out by Tornatzky and Klein (1982), that primary, organization-level adoption may be governed by factors different from those that govern secondary, individual-level adoption. Therefore, it cannot be assumed that secondary adoption will follow smoothly from a primary adoption decision. For example, Jeyaraj and Sabherwal (2008) find that a primary adoption decision mandating the use of a technology tends to lead to partial rather than full adoption at the secondary level.

Fichman and Kemerer (1999, p. 256) introduce the notion of assimilation gap to conceptualize the insight that "widespread acquisition of an innovation need not be followed by widespread deployment and use by acquiring organizations". That is, secondary adoption may remain partial or temporally lag behind primary adoption. Fichman and Kemerer (1999) propose two primary reasons for assimilation gaps. First (mirroring Markus, 1987), for many technologies there is little incentive to be among the first to adopt because the full potential of the technology cannot be reaped until many have adopted it. Second, the knowledge and skills required to exploit the potential of a technology may not initially be present among the employees, thereby creating knowledge barriers that can only gradually be overcome through organizational learning. A third reason is proposed by Mark and Poltrock (2004), who argue that adoption is driven by communication, which is more frequent within a social world (such as an organizational site) than across social worlds. Consistent with this argument, their empirical data show that the different sites in a distributed organization adopted a system to different extents, and that employees who were part of multiple social worlds within the organization (due to membership in distributed teams) experienced tension regarding whether to adopt the system. In addition, Tyre and Orlikowski (1994) show that the period during which employees experiment with a new system is brief and that after this period their use of the system congeals. Subsequent changes in use practices require some triggering event. This suggests a fourth reason for assimilation gaps, namely that an initial partial adoption quickly becomes the way a system is routinely used.

Primary adoption becomes more likely with increasing specialization, professionalism, functional differentiation, vertical differentiation, managerial attitude toward change, managerial tenure, external communication, internal communication, technical knowledge resources, administrative intensity, and slack resources. It becomes less likely with increasing formalization and centralization (Damanpour, 1991). The difference between these thirteen factors and the four factors influencing individual adoption (Section 2.1) is apparent. Damanpour (1991) further finds that the type of organization is a stronger moderator of the influence of the thirteen primary-adoption factors than the type of innovation considered for adoption. This suggests caution in transferring findings about adoption in industry to an e-government setting.

2.3 Adoption of e-government

E-government has been suggested by many researchers to evolve through stages. The e-government maturity model by Layne and Lee (2001) contains four stages: (1) catalogue, where governments solely display information to citizens, (2) transaction, where citizens and governments perform mutual transactions, (3) vertical integration within domains, where back-office systems are integrated with e-services for citizens, and (4) horizontal integration, where systems from all domains are integrated drawing on the same metadata. These models have been criticized for being over-optimistic, building on weak if any empirical ground and highly normative (Coursey & Norris, 2008), for neglecting the citizen's ownership perspective (Andersen & Henriksen, 2006), and for not being deep and broad enough to understand the relation between technology, organization, and government values (Grönlund, 2010). E-government researchers contend that e-government evolves slowly and incrementally (e.g. Norris & Moon, 2005; West, 2004); only some governments are in the transactional stage and none beyond. To explain this, Bannister and Connolly (2012) argue that everything involved in e-government – except technology – changes slowly (law, culture, administration, organization, government structures, and human behavior). In the beginning of the e-government era, many researchers, private consultants, and politicians believed that 'build it and they [citizens] will come' (Coursey & Norris, 2008). However, there is empirical evidence that citizens' adoption of e-government is slow, especially regarding e-government transactions (Gauld, Goldfinch, & Horsburgh, 2010). Access to computers, availability of the internet, and lack of information and technology skills are among the reported barriers to citizens' e-government adoption (West, 2004).

Goldfinch (2007) notes that even though an IS system performs as intended, it may not be used as intended or may not be used at all. Productivity may even decrease due to the problem of agency. Agency refers to the relationship between a principal (manager) who has delegated decisions to an agent (staff) in a situation with different interests and information asymmetry (the agent having more information than the principal). Goldfinch (2007) refers to management not knowing what is going on, staff hesitating to deliver 'bad news' about IS challenges, and public organizations not holding people accountable for IS failures. Irani, Elliman, and Jackson (2007) elicited practitioners' perception of challenges in e-government from workshops and claim that IS 'tended to surface quite often as the creator of problems rather than a solution' (p. 330). Irani et al. (2007) state that coordination and integration of public institutions at all levels is key and that their roles, processes, and policies reflected in systems 'are all fundamental to e-government success' (p. 332). Local government faces a multitude of back-office systems, most of them being off-the-shelf systems with a high need for configuration (Rose, Persson, Kræmmergaard, & Nielsen, 2012). Failure to address interoperability is also recognized as a key barrier to e-government (Bannister & Connolly, 2012).

Yildiz (2007) recommends evaluating not only the output of e-government but also 'the processes that shape the management of e-government' (p. 658) and the question of how national e-government affects local e-government. This is in line with an extensive literature review (Andersen & Henriksen, 2007) finding that IS research dominates e-government research and recommending less 'e' and more 'government' in future research. From 15 empirical cases, Chircu and Lee (2005, p. 619) find that civil servants identify with their institutional tasks to a high degree and that doing things digitally is not key to a nurse or a teacher. Moreover, they find that mandated use 'is one of the best things one can do to

increase the likelihood of the [e-government] initiative's success'. Several scholars argue that New Public Management (NPM) values dominate e-government strategies, considering e-government 'as a linear process of change which leads to more efficient and less costly organization management' (Cordella & Bonina, 2012, p. 512) and that 'these changes have political and administrative consequences that should not be overlooked' (Cordella & Bonina, 2012, p. 515).

3 The Digital Post system

Digital Post was designed, developed, and implemented by the Danish Ministry of Finance to make communication between the public sector and its affiliates more efficient; it constitutes a major cornerstone in the current 2011-2015 e-government strategy. 'By 2015, we expect to be able to send 80% of all correspondence to citizens in digital form. [...] This will save billions of kroner on administration throughout the public sector' (The Danish Government, Danish Regions, & Local Government Denmark, 2011). It is basically an email system in which identified actors can communicate in an encrypted environment. Municipal staff sends mail to Digital Post through an output manager. If the citizen has adopted Digital Post, the output manager sends a digital letter; otherwise, the output manager sends a physical letter. The municipality saves around € 0.8 per digital letter sent from Digital Post. Citizens access Digital Post through the Danish national public portal *borger.dk* using the national eID solution with their social security number. Digital Post is free of charge for citizens. The Ministry of Finance issued a national business case that posited that 'The costs of continuing to send letters in paper form is considerable, equivalent to between DKK 1.8 and 2.5 billion' (€ 240 and € 330 million) (Rambøll, 2010). Municipal services are partly state funded and to some degree subject to negotiation between the Local Government Denmark (LGDK) and the Ministry of Finance (FM). LGDK and FM agreed that state funding would be reduced by € 6 million in 2013 due to estimated postal cost savings, by € 7.5 million in 2014, and by € 14 million in 2015 (The Danish Government and LGDK, 2012).

4 Method

We used transaction data from the two major output managers on the market during the three-year period (doc2mail from KMD from 98 municipalities and OM from Itella/KMD from 6 municipalities). These data were provided by KMD and gave the number of transactions per month per municipality from inauguration of Digital Post and onward. To convert the data to monthly transactions per 1000 citizens in each municipality, we retrieved the population distribution by municipality for January each year from the Ministry of Economic Affairs and the Interior. During the period, the population rose by 0.5% a year and we introduced a minor discontinuity from one year to the next. In late 2011, the Danish government centralized welfare payments; hence, administrative workload was reduced in the municipalities. This caused a 20% decrease of municipal communication (September 2013). Utilizing the citizen identification in each transaction from the new institution, we had Statistics Denmark generate transaction sum data per municipality to correct for the drop in communication.

The citizen adoption data came from two sources. The total number of Danish citizens who had adopted Digital Post from 2010 until November 2011 was provided by the vendor of Digital Post and converted to a percentage of the population using population data from the Ministry of Economic Affairs and the Interior. Since December 2011, Statistics Denmark published statistics about the percentage of citizens registered in Digital Post, based on transaction data from e-Boks (the vendor of Digital Post) and population data. The statistics gave the proportion of Danish citizens, registered in Digital Post per municipality on a weekly basis. We used the proportion from the week that included the last day in the month as the monthly value.

Estimated unit costs and amounts from business cases (Local Government Denmark, 2012; Rambøll, 2010) were used to compare the realized municipal savings with estimated savings. We used mail analyses provided by four municipalities to determine the adoption potential. The realized adoption

was calculated using Digital Post output data. Monthly sum data of output from Digital Post, distributed on public institutions, in the period from July 2010 was provided by the Danish Digitization Agency according to an agreement between the Agency and the authors.

5 Results

The overall adoption of Digital Post by municipal staff and citizens is depicted in Figure 1 for the period July 2010 to September 2013. Data about the citizens' adoption until November 2011 (the dotted line in Figure 1, right) were only available as a national percentage and will not be analyzed further.

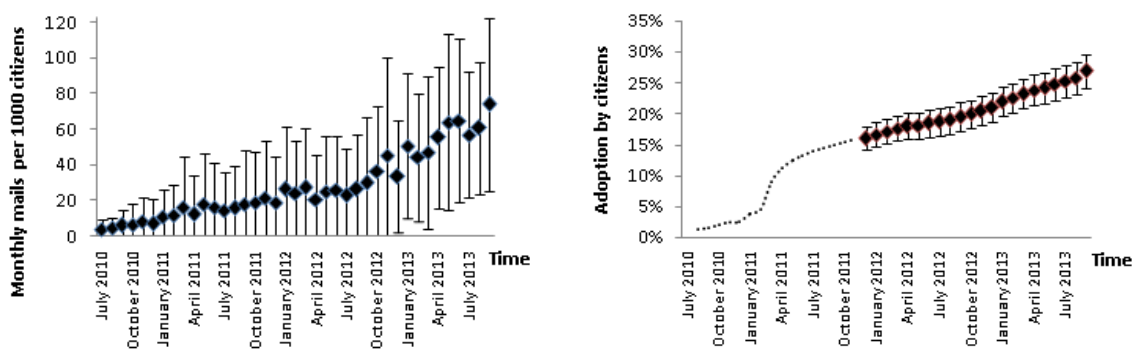


Figure 1. Adoption of Digital Post by municipal staff (left) and citizens (right). Error bars show the standard deviation.

The number of mails sent to citizens by municipal staff is subject to seasonal variation. For example, Danish municipalities send correspondence about property tax in January or February. To circumvent seasonal variation, we analyzed the trend in the data by comparing the average number of monthly mails per 1000 citizens sent by municipal staff during the third quarter (July-September) of each year. The annual increase was significant from 2010 to 2011, $F(1, 97) = 23.96$, $p < 0.001$, from 2011 to 2012, $F(1, 97) = 24.92$, $p < 0.001$, and from 2012 to 2013, $F(1, 97) = 137.18$, $p < 0.001$. However, the standard deviations were large for all years except 2010, indicating that adoption evolved differently in different municipalities. We analyze the different adoption patterns among the municipal staff in the next section.

To assess whether adoption by citizens was increasing during the period, we calculated the adoption rate for each quarter. All six comparisons of one quarter to the next were significant, $F_s(1, 97) > 472$ (all $p_s < 0.001$), indicating that adoption increased throughout the period. In addition, the standard deviations were modest, thereby leaving less room for different adoption patterns among the citizens in different municipalities compared with the municipal staff.

5.1 Adoption patterns by municipal staff

To analyze the adoption patterns among the municipal staff in more detail, we made a cluster analysis. For this analysis, each municipality was described by the number of monthly mails per 1000 citizens in the third quarter of 2010, 2011, 2012, and 2013. We then used K-means clustering to classify the municipalities into clusters with a similar adoption pattern. K-means clustering requires pre-selection of the number of clusters. We made classifications with three to six clusters and inspected the results. On the basis of these inspections we chose a classification into four clusters because it yielded clusters with distinctly different profiles, because these profiles translated into clear adoption patterns, and because the municipalities were reasonably spread across the clusters. Figure 2 shows the four

clusters. For each cluster the figure shows the evolution in the average number of monthly mails sent per 1000 citizens in the third quarter of the years 2010 to 2013.

The first cluster (Figure 2, top left) represented slow adoption of Digital Post by municipal staff throughout the period. This adoption pattern was the most frequent in that the cluster contained 51 of the 98 municipalities. In the third quarter of 2013, adoption had reached a modest average of 33.5 ($SD = 15.7$) monthly mails per 1000 citizens. The increased growth rate from 2012 to 2013 compared to the previous years might, however, point toward accelerated adoption in the coming years.

The second cluster (Figure 2, top right) represented limited adoption during the period 2010-2012 followed by a substantial increase in 2013. Until 2012 this cluster resembled the first cluster, but from 2012 to 2013 the use of Digital Post increased by a factor of 6.9, reaching an average of 100.5 ($SD = 24.0$) monthly mails per 1000 citizens in the third quarter of 2013. The municipal staff in 21 municipalities followed this adoption pattern.

The third cluster (Figure 2, bottom left) represented gradual adoption at a fairly even annual rate, reaching an average of 91.1 ($SD = 25.0$) monthly mails per 1000 citizens in the third quarter of 2013. This adoption pattern, followed by 21 municipalities, differed from the two previous adoption patterns by an earlier increase in adoption to a level beyond marginal.

The fourth cluster (Figure 2, bottom right) represented substantial adoption already in 2011 and no further adoption increase in the remainder of the period. Contrary to the three other adoption patterns, this pattern suggests that adoption has reached a plateau and might remain at this level in future years. An average of 104.0 ($SD = 4.2$) monthly mails were sent per 1000 citizens in the third quarter of 2013. This adoption pattern was followed by five municipalities and was, thereby, the least frequent.

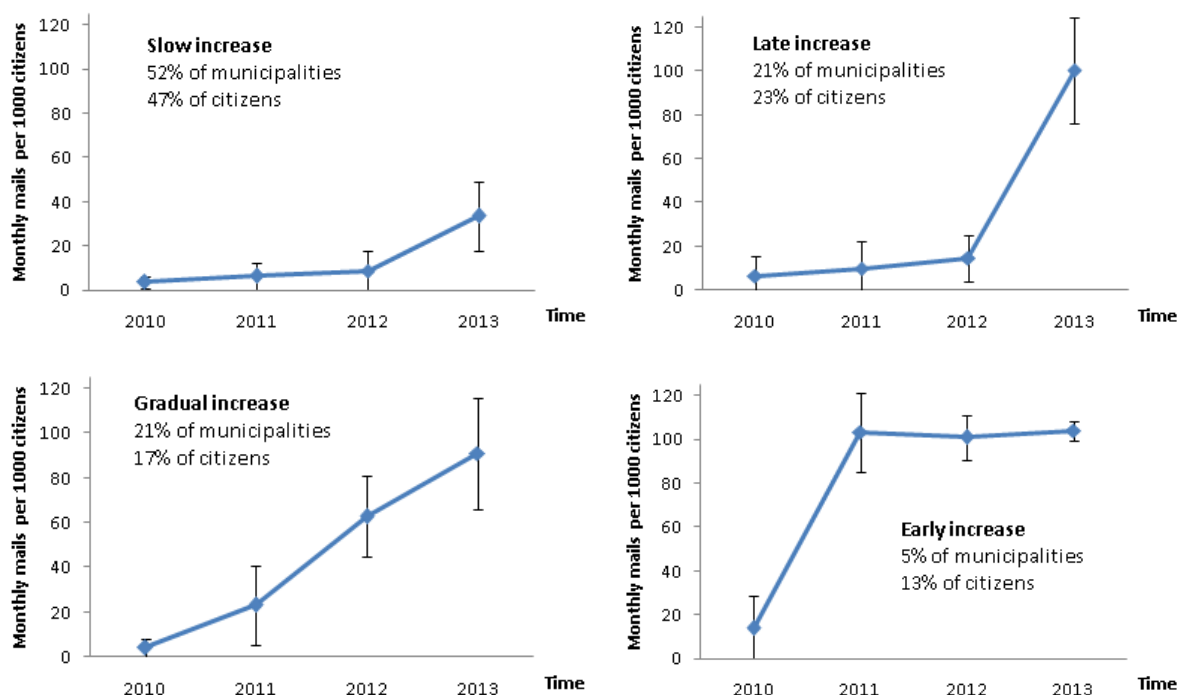


Figure 2. The average number of monthly mails per 1000 citizens sent by municipal staff in the third quarter of the years 2010 to 2013. Each graph shows one cluster of municipalities. The clusters contain 51 (top left), 21 (top right), 21 (bottom left), and 5 (bottom right) municipalities. Errors bars show the standard deviation.

5.2 Adoption patterns by citizens

To analyze the adoption patterns among the citizens, we again applied K-means clustering. For this analysis, the citizens in each municipality were described by their rate of adoption of Digital Post in seven quarters (from the first quarter of 2012 to the third quarter of 2013). We made classifications with two to six clusters and inspected the results. On the basis of the inspections, we chose a classification into two clusters because it divided the municipalities into what could readily be interpreted as a lower and a higher rate of adoption, with a fairly even spread of the municipalities between the two clusters. We decided against higher numbers of clusters because all clusters evolved in a similar, roughly linear, manner and only differed in the rate of adoption. Figure 3 shows the two clusters.

The first cluster (Figure 3, left) represented a gradual adoption increase from 17.9% to 27.5% over the seven quarters. In our two-cluster classification, the 39 municipalities with this adoption pattern were those with a high level of adoption among the citizens. The annual increase in adoption was 5.4 percentage points.

The second cluster (Figure 3, right) contained the municipalities with a lower level of adoption among the citizens. In these 59 municipalities, the citizens' adoption of Digital Post increased from 15.0% to 23.4% over the seven quarters, corresponding to an annual increase of 5.1 percentage points. Thus, the annual increase resembled that for the first cluster.

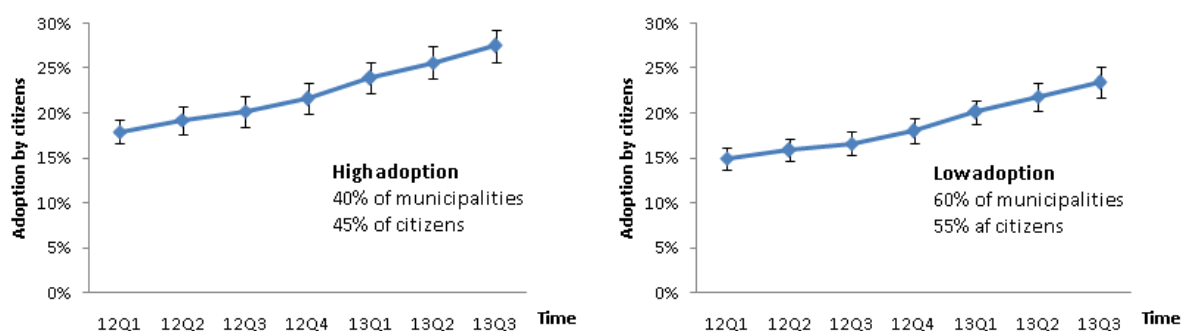


Figure 3. The percentage of citizens in a municipality who have adopted Digital Post in the period from the first quarter of 2012 to the third quarter of 2013. Each graph shows one cluster of municipalities. The clusters contain 39 (left) and 59 (right) municipalities. Errors bars show the standard deviation.

5.3 Relation between the adoption patterns of municipal staff and citizens

Table 1 shows a contingency tabulation of the adoption patterns of municipal staff and citizens. For the municipalities with a slow, late, and gradual increase in the use of Digital Post by municipal staff, the citizens' adoption of Digital Post was low more often than high. For the municipalities with an early increase in the use of Digital Post among the municipal staff, the citizens' adoption was always high. This difference between the municipalities with an early increase in the use of Digital Post and those with a slow, late, and gradual increase was significant, $\chi^2(3, N = 98) = 8.44, p < 0.05$.

With respect to the level of adoption reached by the third quarter of 2013, the Pearson correlation between the municipal staff's adoption (measured by the number of monthly mails sent per 1000 citizens) and citizens' adoption was 0.324. Thus, the variation in the municipal staff's adoption explained a modest 10.5% of the variation in the citizens' adoption, and vice versa.

Municipal staff Citizens	Slow increase	Late increase	Gradual increase	Early increase	Total
High adoption	18	7	9	5	39
Low adoption	33	14	12	0	59
Total	51	21	21	5	98

Table 1 Relationship among the adoption patterns of municipal staff and citizens.

5.4 Realized, estimated and potential savings from Digital Post

The net savings for sending mail through Digital Post is estimated at DKK 6.2 per mail (€ 0.8) (Rambøll, 2010). The dual adoption by municipalities and citizens resulted in 1.3 million digital letters in 2013, a saving of € 1.4 million. The correlation between the savings distributed on municipalities was calculated against municipal adoption and citizen adoption. The variation in citizen adoption explained only 3% of the variation in savings ($p = 0.07$). The variation in municipal adoption explained 60% of the variation in savings ($p < 0.005$).

Four municipalities, one from each cluster, had data about Digital Post potential (see Table 2). Potential was found by calculating (from postal costs) the number of physical letters sent from all units in a municipality. The slow-increase municipality only reached 3% of its potential in 2013, whereas the late-increase municipality reached 6% and the gradual- and early-increase municipalities reached 18%.

Municipality	A	B	C	D
Municipal adoption cluster	Slow	Late	Gradual	Early
Annual physical letters per 1000 citizens	2618	3418	1795	2127
2012 Realized	31	45	121	274
Percentage realized (corrected)	1%	2%	8%	15%
2013 Realized	50	149	217	254
Percentage realized (corrected)	3%	6%	18%	18%

Table 2. Potential (physical letters per 1000 citizens) and percentage realized of the potential for a single municipality in each municipal adoption cluster. Annual physical letters for A and D are from 2010; data for B and C are from 2012. The percentage realized has been corrected for a decrease in workload caused by centralization.

6 Discussion

We find that substantially more of the variation in the obtained savings is explained by the variation in adoption by municipal staff than by the variation in adoption by citizens. This finding appears at odds with the dominant focus on citizen adoption in most e-government adoption research. In the discussion, we will address the findings from the viewpoint of the municipal adoption.

6.1 Significant deficit due to slipped effects from Digital Post

When we compare the whole municipal sector with the business case, the difference between anticipated and realized savings is large. According to our estimate, the municipal sector reduced postal costs by € 1.2 million in 2013 while the state funding was cut by € 6.0 million due to estimated savings; this is a deficit of € 4.8 million. In an average municipality of 40000 citizens, this corresponds to one headcount (using the headcount unit cost from the national business case). Danish municipalities need to cut staff, lower the service toward citizens or draw on their savings to recoup the deficit from the Digital Post initiative. The consequences will be most severe in the 51 municipalities in the slow-increase cluster.

The estimated total potential from the business case is 27 million mails in 2013, equivalent to 5000 letters per 1000 citizens. If we compare this number with the number of physical letters for the four municipalities in Table 2, the four municipalities' own estimate of the potential is 37% to 71% of the business case potential (mean: 51%). This finding is consistent with earlier reports of overly optimistic expectations toward e-government among researchers (Coursey & Norris, 2008) and politicians (Goldfinch, 2007). This study also supports the claim by Cordella and Bonina (2012) that the NPM values embedded in e-government initiatives may have political and administrative consequences.

6.2 The adoption process

A barrier to quick adoption is that Digital Post was designed without a functionality for municipal staff to try it out. The lack of opportunity to experiment with new innovations has been found to slow down adoption (Rogers, 2003). To try Digital Post, employees had to use themselves as 'test citizens', but to do that, they needed to register as users of Digital Post and use their personal social security number. One municipality ordered its staff to do so but this was later deemed illegal by the Danish Data Protection Agency. When municipalities started to adopt Digital Post by the end of 2010, only 2% of citizens had adopted Digital Post. If the adoption by municipal employees is equally low, only a minority of employees can use themselves as 'test citizens'.

Another reason for hesitation in the adoption of Digital Post is that some legal issues remained unresolved. One such issue is that mail from a Danish public institution must be signed by the employee who has handled the case. To satisfy this requirement, municipalities have resorted to workarounds (e.g., scanned signatures, a practice later deemed illegal). The law that makes it legal to communicate electronically without a written signature was passed at the end of 2013, more than 3 years after inauguration of Digital Post. A second legal issue is that municipal staff needs a citizen's social security number to communicate digitally with him or her via Digital Post. Due to the possibilities for misusing access to social security numbers, the system in which municipal staff can look up social security numbers contains a prominent message emphasizing that it is illegal to retrieve social security numbers unless they are necessary to the handling of a case. It was only in February 2014 officially declared that communicating digitally with a citizen, rather than by physical letter, is a lawful reason for retrieving a social security number. This shows how individual-level adoption by municipal staff was entangled in legal issues that were left unresolved when the organization-level decision to adopt was made. As a consequence, the municipal staff has been in an uncomfortable situation. Staff has been lacking the authority to solve the problem 'exported' to them and was, at the same time, expected to derive benefit from Digital Post. Municipal management has been in a similar situation because they, too, have lacked the authority to solve the problem. Thereby, the legal issues illustrate that organization-level adoption is a possibly yearlong process; it is not merely a decision to adopt, as implied by Gallivan (2001).

The vast majority of mails from municipalities to citizens are cover letters with attachments. The dominant work situation is that municipal staff generate documentation from one of a variety of systems and attach this documentation to a cover letter from the word processor. However, it was only in August 2012 that the vendor of the output manager that sends mail to Digital Post released a version that could handle attachments easily. The interoperability challenge is emphasized as vital by practitioners (Irani et al., 2007) and recognized as a major barrier to e-government by Bannister and Connolly (2012). They argue that governments need to stop chasing new ideas and instead focus on old challenges that remain unsolved and thereby hamper adoption of further e-government.

6.3 Differences across municipalities

We found differences amongst municipalities in current adoption level and in adoption process. The municipal tasks are the same, Digital Post is the same, and the surrounding systems are similar. When looking at bigger municipalities with populations of more than 100000 citizens, we find that these municipalities appear in all four clusters.

At least 72 of the 98 municipalities (slow and late increase) have suffered from the type of assimilation gaps, where acquisition does not necessarily lead to deployment (Fichman & Kemerer, 1999); they hardly used Digital Post during the two years after its technical implementation. Only 16% of citizens had adopted Digital Post after the first two years, thus there was little citizen pressure on municipalities to adopt Digital Post. Tyre and Orlikowski (1994) found that after a brief window of opportunity, only interventions like external events could reopen the window. In summer 2012, two things happened that may have reopened the window. The Danish parliament passed the Digital Post law that makes it mandatory for businesses and citizens to receive digital letters from the public sector in 2013/2014. At the same time, the Ministry of Finance and LGDK made the agreement to cut state funding for local governments in 2013 due to anticipated savings from Digital Post. These two events may have stimulated municipal adoption.

The early-increase municipalities seem to hit a ceiling at about 100 monthly mails per 1000 citizens. The majority of municipal case handling is supported by legacy systems. In most cases these systems are designed to only print physical letters. As long as these systems cannot produce mails to integrate with Digital Post, physical letters are being sent. The primary vendor of the legacy systems, KMD, has promised integration to Digital Post and the ceiling will move upward as this happens.

We speculate that the gradual and early increase municipalities have a more centralistic culture with a higher degree of mandated use. Gallivan (2001) found that a 'strong top-down, bureaucratic organizational culture may facilitate early stages of innovation assimilation'. A strategy for e-government initiatives is important to guide the change process. The early increase municipalities may have specified the anticipated effects from the Digital Post, made these effects measurable, and set up targets, along with allocating the necessary project management skills and resources (Ndou, 2004).

6.4 Relation between adoption by municipal staff and citizens

We find a merely modest relationship between the adoption by municipal staff and citizens. This finding suggests that the adoption of Digital Post is subject to factors that moderate the critical-mass effects expected for communication and coordination systems (Markus, 1987). One moderating factor explicitly built into the output manager is that the system checks whether the citizen (to whom a mail is sent) has adopted Digital Post; it sends the mail as a physical letter if the citizen has not adopted Digital Post. Thus, municipal staff can send mail to citizens using Digital Post, irrespective of whether the citizens have adopted Digital Post. From the point of view of the municipal staff, this functionality simulates full adoption among citizens. Another moderating factor is that since November 2010 municipalities have been required to accept incoming mail from citizens in Digital Post. Thus, citizens can, in principle, send mail to their municipality through Digital Post even if the mail they receive from their municipality is a physical letter. While municipalities have not fully lived up to this requirement, it has contributed to reducing the effects of critical mass on the adoption of Digital Post.

In spite of these moderating factors, the municipal staff's adoption is likely affected by their perception of how citizens feel about communicating digitally with the municipality. This perception is further affected by their personal feeling, as citizens, about using digital communication for such purposes. Thus, their perception of how citizens feel about Digital Post is affected by their concomitant membership of one social world (Mark & Poltrock, 2004) as municipal staff and another as citizens. Conversely, citizens' adoption is likely to be somewhat affected by their perception of whether their municipality prefers digital communication through Digital Post. These perceptions may help explain why the adoption pattern characterized by an early increase in the use of Digital Post by municipal staff always co-occurs with the pattern of high adoption among citizens. However, this co-occurrence involves only 5 of the 98 municipalities. For the remaining 93 municipalities, it appears as though municipal staff and citizens have adopted or not adopted Digital Post on the basis of factors related to their own use of the system, such as whether they have the required knowledge and skills (Fichman & Kemerer, 1999) and whether adoption is compatible with their other tasks, technologies, and values (Goodhue & Thompson, 1995).

6.5 Limitations

Three limitations must be remembered in interpreting the results of this study. First, the total number of mails sent from municipalities to citizens (the potential) is only known for a small subset of the municipalities. Therefore, adoption by municipal staff cannot be analyzed as the percentage of mails sent through Digital Post. This makes it difficult to assess how far the municipal staff has progressed toward full adoption. Second, the need for communication between municipalities and citizens may not be evenly distributed among municipalities. Big municipalities may have an overrepresentation of citizens who are in considerable contact with the welfare system, and, hence generate relatively more mails. Third, the study does not contain empirical data about why municipal staff and citizens adopt or refrain from adopting Digital Post.

7 Conclusion

More than three years after Digital Post was launched, municipal staff use it for sending an average of 74 monthly mails per 1000 citizens (less than one per year per citizen), and 27% of Danish citizens have adopted it. However, these national averages contain considerable variation from one municipality to another. We have identified four adoption patterns among the municipal staff and two among citizens. Our extrapolation of the use of Digital Post to full adoption among municipal staff and citizens indicates that only about 50% of the cost saving estimated in the business case can be realized. Though the extrapolation is based on data from only 4 of the 98 municipalities, it suggests that the business case exaggerates the possible saving from adopting Digital Post. This illustrates the uncertain and political environment of which e-government initiatives such as Digital Post are part.

We see three research implications of our study. First, organization-level and individual-level adoption in the municipalities are entangled. For example, interoperability problems and legal issues speak against the notion of an organizational decision to adopt followed by secondary adoption by individual staff. Rather, organization-level adoption appears to be a continuing process that runs in parallel with individual-level adoption. Second, adoption by municipal staff and adoption by citizens have been decoupled to an extent that has moderated the critical-mass effects otherwise seen for communication and coordination systems. This decoupling eases adoption during early stages but also entails that adoption will be less self-sustaining after critical mass has been achieved. Third, case studies are needed to investigate how municipal staff and citizens experience the incentives and disincentives for adopting Digital Post. The adoption patterns identified in this study provide a starting point for selecting case-study municipalities and a context for interpreting case-study results.

In terms of implications for practice, two issues appear particularly noteworthy. First, the four different adoption patterns among the municipal staff imply that the municipalities are at different stages of e-government readiness and, therefore, need different types of initiatives (at different times) to increase their use of Digital Post. The differences in adoption patterns and readiness also suggest a potential for exchanging lessons learned among the municipalities. Second, as long as municipal budgets are cut by an amount derived from the business case for Digital Post it appears that municipalities will have to cut expenses in other areas to meet the cut in their budgets motivated by the introduction of Digital Post.

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Paper 3

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Ethical dilemmas and PD as important steps towards critical e-government design

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ABSTRACT

The delivering of public services to citizens through the internet – also known as e-government - has gained serious momentum, driven by political ambitions of improved efficiency. E-government, however, is considered complex and e-government failures are well known from media. Research of how e-government is enacted inside government is sparse. Technology mediated public services in real world entail ethical dilemmas. By extracting ethical dilemmas from a qualitative e-government participatory design study, this paper shows how ethical dilemmas may inform future e-government design and design processes. The case, adoption of digital post in a local e-government setting, showed that design flaws, staff's concern for citizens and political fear of citizens' critique had an impact on e-government adoption.

Author Keywords

Participatory design, design science research, e-government, action research, public sector

ACM Classification Keywords

H5.3 Organizational design, H4.m Miscellaneous.

1 INTRODUCTION

E-government, the delivery of public services to citizens through the internet, has been growing steadily around the world for at least the last decade. The public sector covers a range of various domains and actors and e-government is widely recognized as being multivariate and complex (Rose, Persson, Kræmmergaard, & Nielsen, 2012) and it is a major challenge to derive benefits from e-government (Goldfinch, 2007). There is a growing political pressure for achieving benefits from e-government initiatives. The Danish national e-government strategy (The Danish Government, Danish Counties, & Local Government Denmark, 2011) introduces more than forty mandated e-services from 2012 to 2015, whilst at the same time reducing state funding according to the anticipated cost reduction. Failure to reduce costs by the e-government initiative imposes cuts elsewhere in the public institution's activity or service.

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E-government research tend to focus primarily on the demand and supply side, i.e. the citizens' adoption of e-government services and the services that governments offer (Yildiz, 2007). Even though some researchers see organizational issues (e.g. Ndou, 2004) and the role of management (e.g. Braun, Ahlemann, & Mohan, 2010) as key to understanding e-government, scholars state that 'we still know little about the impacts and results associated with e-Government' (Luna-Reyes, Gil-Garcia, & Romero, 2012). The predominant e-government research tends to be overly optimistic about e-government impact but on limited empirical ground. A positivistic research approach and a tendency to not leave the office might explain the 'absence from some research of the human, social, and political elements that more easily become apparent during direct contact with data objects and settings (Heeks & Bailur, 2007, p. 257). These critical scholars imply that major e-government questions may remain hidden (e.g. what are the impacts of e-government) and they strongly recommended to investigate internal e-government processes in an inductive inside-out approach using qualitative methods (Yildiz, 2007) and applying a more critical approach (Heeks & Bailur, 2007).

Participatory Design (PD) and Action Research (AR) constitute suitable research approaches for generating in-depth knowledge about how and why in technology use. This paper reports from an analysis of ethical dilemmas in such an AR study with integrated PD activities on achieving benefits from a national e-government initiative (digital post) in a local government setting. The question is, whether applying the lens of ethical dilemmas can reveal knowledge to inform future e-government. My stance on the Danish e-government strategy is given after this introduction. Section three touches upon ethical dilemmas in e-government. Research methodology and case setting are given in section four and the ethical dilemmas, derived from the qualitative study in section five. Finally, implications and conclusions are stated.

2 DANISH E-GOVERNMENT AND MY STANCE

The Danish Ministry of Finance launched the 'digital post' system (DP) in 2010 with the aim of reducing public sector postal costs. DP is basically an e-mail system, where public institutions can communicate encrypted and authenticated with citizens. Citizens access their DP with their social security number. The social security number also acts as the 'e-mail address'.

2010 Inauguration of DP, it was mandated for public institutions to receive digital post from citizens

2012 Only 1 of 5 citizens had registered so Parliament made it mandatory for citizens to receive digital post from public institutions from 2014

2013 The Ministry of Finance reduced funding of public institutions, according to anticipated reduced postal costs

The Ministry of Finance provides the DP system and leaves it to the public institution and the market to establish the systems, with which public institutions connect to DP. Studies have proven that public institutions have difficulties receiving and sending digital post and the Minister of Finance have made an official apology to Parliament.

As a researcher, I enter the research setting with my experience, knowledge, skills and personal background. I hold a twenty-five year industrial carrier within alignment of IT, organization and business processes in public sector operations from academic staff and management positions. I had the responsibility of Digital Post implementation and operations in my former industry position. I am convinced that e-government can increase public sector efficiency and go hand-in-hand with improved work life quality. I am critical of the current e-government strategy for being too optimistic and aggressive and for the design and implementation not being based on work practices and user involvement. I want to contribute to e-government research by showing how e-government initiatives can and must be informed by knowledge of work practice and engagement of civil servants.

3 ETHICAL DILEMMAS, PD AND AR

Assumptions about how a technology will be used are embedded in the technology design. These assumptions become active as design is completed in use and ethical dilemmas arise when confronted with design decisions in use (Robertson, 2006). Mullen and Horner (2004) assert that new ethical issues arise as government becomes bound up with virtual behavior, becoming e-government. They state the importance of finding out, whether ethical dilemmas are new in the government of society and if they express a 'political vacuum'. According to Mullen and Horner (2004), ethical dilemmas relate to trust and equity. Trust is connected to expectations that the trustee will act in one's well-being and the feeling of security that these expectations will be met. Trust in e-government refers to trust in the information, the system and the public institution. Equity constitutes the unequal access to digital services related to technical means, knowledge or skills. Mullen and Horner (2004) proposed a framework to be able to better address and understand ethical dilemmas as: related to; dependent on; determinant of and specific of e-government. The authors take the citizen view even though it isn't stated explicitly. Ethical dilemmas may arise from different values and perspectives of different stakeholders.

The underlying philosophy of PD is that the knowledge of the users of a technology must inform technology design and that users have a right to be heeded in decisions that affect their work situation (Simonsen & Robertson, 2012). Technology must be designed in

genuine collaboration with users; users learn from designers about design options and designers learn from users about work practices (mutual learning). A sociotechnical approach is pivotal in PD, focusing on actual work practices of the technology, embedded in the situated environment. PD is concerned with technology design and design processes and insists that the design process may be completed only in use (design-in-use) (Blomberg & Karasti, 2012). AR constitutes a genuine collaboration between practitioner and researcher to perform interventional action that solves practitioners' problem and at the same time yield research knowledge (Baskerville & Wood-Harper, 1996).

4 METHODOLOGY

The AR study was conducted as canonical AR (Davison, Martinsons, & Kock, 2004) and followed the AR phases of diagnosis, action planning, action, evaluation and specifying learning. The problem was lack of postal costs reduction, thus the aim was to increase use of Digital Post. The project setting constituted two departments at the Copenhagen Citizen Service (CCS) with a total of 80+ clerical staff, four team leaders and two heads of departments. The CIO, project manager and researcher constituted the AR project group. A technological deterministic, New Public Management (NPM) approach from CIO, managers and top-managers dominated the Digital Post project. Ethical dilemmas were able to be revealed by giving the weak stakeholder, with a more technology skeptical viewpoint – clerical staff - a voice, thus, a PD approach was chosen.

The study included various quantitative and qualitative data collection methods. The researcher was situated in the organization two days a week through one year. Participant observations were conducted and documented.

A Delphi-study was conducted in one team (four groups) to gather initial domain knowledge. Each group was presented with five themes (technology, staff, citizen, interaction and ownership) with a positive and negative question (e.g. staff: 'What does it easy/troublesome for staff to use Digital Post?'). The Delphi-study was chosen to elicit the predominant challenges. Breakdowns in Digital Post work processes were elicited from two teams one week every month, during five months. The two teams (34+14 employees) with most work-task variety and the most engaged teamleaders were chosen. Staff would report on every breakdown (involved work processes, systems, actors, perceived barriers and solutions). Teamleaders were accountable of utilizing the data in dialogue with staff to recurrently improve the Digital Post design-in-use. The manager was accountable of following-up on teamleaders. PD activities constituted the involvement of staff and managers in iterative design-in-use processes focusing on measurements and changes in work practices. The analysis is based on three ethical dilemmas of managers and three of staff, interpreted from the qualitative data.

5 THE ETHICAL DILEMMAS

5.1 Management

Access to a test environment and visibility have positive impact on individual adoption of new innovations

(Rogers, 2003). The work process of printing and packing a physical letter supports both trailability and visibility. DP was designed without test functionality, moreover, digital communication is invisible. Introducing digital post, managers were left with limited means to train staff in the digital post process, in order to create the necessary self-efficacy, leading to further adoption. Staff, however, can simulate test by sending digital post to another employee as citizen. This makes it possible to test the system and 'visualize' the final digital letter. Moreover, staff would be able to understand and support inquiries from citizens using digital post. Managers were left with the ethical choice of making staff use their personal and private social security number and register as a citizen in the DP; thereby mediating thorough training or respect privacy and sustain alienation from the digital post system. The Data Protection Agency stated that municipalities could not order staff to use their own social security numbers, which reinforced the managerial dilemma.

E-government is about citizens and an ethical dilemma arises where managers need to balance between political and design concerns. Design-in-use in e-government may ultimately include citizens as the 'end users'. In this case, the municipality and the researcher initially agreed to measure citizens' view of digital post in the design process with the aim of ensuring that citizen' satisfaction did not drop. Robertson and Wagner (2012) note that having to include critical views from citizens may be politically sensible. A survey was elaborated in a very cumbersome and lengthy process by the researcher and the communications department. It was only finalized when the researcher suggested sending the survey in the name of the university, i.e. the municipality was not accountable. Managerial decision to send all payment reminders physically was another design example influenced by fear of citizens. At national level there had been political concern in media about citizens forgetting to collect their digital post. Some citizens had not seen their housing tax bill or the following reminder, also sent by digital etc. Reminder fees accumulated and many citizens refused to pay the fees. During the media coverage, the Digitization Agency recommended public institutions to send reminders by physical post, which was followed by the manager.

As part of project closure, the researcher presented the findings in a newspaper article draft to the CEO; both the positive increase in digital post, but also the learnings that could inform future design processes. Moreover, the project revealed many barriers beyond the control of the municipality, also included in the article. The CEO was very unhappy with the article; he wanted the article to focus more on the positive effects from digital post and how well CCS had managed the implementation process. The researcher was summoned to an emergency meeting with CEO and CIO. The article was never published and the municipality missed the opportunity to question the anticipated effects from digital post. The overly optimistic expectations connected to e-government initiatives and the predominant technology determinism will prevent bad news from emerging (Goldfinch, 2007).

The ethical dilemma of the CEO of displaying one's own organization as not being capable of delivering the anticipated results (at the same time attracting focus on insufficient management) and questioning prerequisites of the national business case and the reduction in state funding is salient.

5.2 Staff

Clerical staff is very concerned about privacy of citizens. The Danish act of processing personal data states that personal data (e.g. the social security number) must only be used if it's necessary for case handling; subsequently the citizen must be informed. Staff uses the national register of persons in various work processes. Logging into the system, a warning is displayed, stating that 'transactions are being logged and unauthorized use of the system are punishable, may have legal consequences and will be reported to the police and the employer'. Both staff and managers were convinced that it was illegal to draw the social security number from the system only to use it as the 'address' in the DP. If, in a specific case, the social security number was not available from correspondence, staff had to enact – what they perceived as an illegal act – draw the social security number from the national register to send digital post or send a physical letter, not following the decision of digital communication. This dilemma arose from a workshop in the beginning of 2012 and was put forward to the Digitization Agency. Two years later, the Data Protection Agency resolved the problem.

Concern for the citizen is pivotal to clerical staff of CCS. This was a predominant theme in all workshops and focus groups and constituted a major mental barrier to adoption of digital post. Concern is about citizens without computers, the elderly that don't know how to use the internet, the immigrants that cannot understand Danish, the disabled etc.; exactly the segments of citizens, whom are mostly in contact with the municipality. In general, digital post, towards these groups, is perceived as poor service by staff. Many work processes include sending a form to the citizen, which the citizen fills out, signs and returns to the municipality. With digital post, staff sends a PDF form to the citizen. Many employees regard this as poor service and unfair, because the municipality burdens the citizen with having to print the form while the municipality saves the postal costs. Also, content, which is perceived by staff as vital for the citizen, e.g. refusal or granting of welfare payment was perceived as inappropriate to send digitally. In these and many other similar cases, staff is faced with the ethical dilemma of offering poor service or following orders of sending post digitally. Value conflicts are state by Rogers (2003) as having a major negative impact on adoption.

A recognized dilemma relates to the inability of technology to support the entire work process. The time, invested in solving the technological challenges, is taken from the time employees have to solve work tasks. (Mullen & Horner, 2004). Staff is faced with many situations, where the digital channel is not the natural choice. Legacy systems that can only make physical prints are one major barrier. The funeral aid system was an example. To be able send the grant letter to the citizen

digitally, staff needed to scan the print from the system. The municipality had centralized scanning, so staff should send the print by internal mail (collection was reduced to twice a week) to the scanning center (being in another physical location), await the file and the return of the grant letter for archiving, before the case could be closed. The one and a half case handler had more than hundred cases a week. It was a challenge to keep track on returned files (file names had no citizen identification) and of grant letters that disappeared in the mail. Other examples are physical letters to be forwarded to citizens and forms that needed stamp and signature. These types of barriers enforced the ethical dilemma of balancing effort onto staff.

6 IMPLICATIONS

The presented ethical dilemmas are all strongly connected to e-government. Some are deterrent of the e-government initiative, e.g. lack of trialability and visibility, attained from a poor design and existence. Others are dependent on e-government, e.g. the various physical barriers. Some relate to the nature of public sector, e.g. managers' fear of critical views from citizens, workers perception of service quality and the right to equal access to public service, but these become prevalent when government is electronic. Hence, all these unintentional ethical dilemmas affect the e-government adoption process negatively. Moreover, by reducing e-government practice, the ability of shaping future e-government by design-in-use is reduced. Failure to involve citizens' service perception from fear of critical voices reduces the ability of staff to actually learn about how citizens actually feel about e-government services instead of relying on one's own (imagined) perception.

Three assertions may follow from the ethical dilemmas. Firstly, a need for more practice driven processes in local government. Secondly, a need for more attention to application design, alignment with user values, privacy issues and the necessity of design-in-use activities at the national e-government level. Finally, an open questioning of the assumptions on which, the national e-government strategy lies upon, (overly optimistic and technology deterministic) would serve to mature national e-government processes to further be aligned with practice.

7 CONCLUSIONS

Reporting from a qualitative study, this paper has shown how specific ethical dilemmas have arisen in the wake of a national e-government initiative. Negative impact on adoption and work life quality may constitute the consequences from these. Recognition of these ethical dilemmas in e-government help gain insights that may inform the design of the e-government adoption process at local and national level.

Technology and thus, the provision of e-government is perceived by the dominant stakeholders - politicians, managers, consultants, unions - as something 'good' by nature; the more technology the better. The consequences of electronic government on individuals and the public sector ethos may not have unfolded yet. The focus on ethical dilemmas may comprise an important step in the

endeavour of a more critical view on the current evolvement of e-government, formulating alternatives and to pose questions like when not to digitize. PD – as in the 1970'ies – may provide the necessary tools to give voice to and empower those that can fuel this endeavour.

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Paper 4

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FORMATIVE EVALUATION: A MODEL TO ENSURE VALUE FROM E-GOVERNMENT

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Abstract

Governments are investing in e-government, mainly to enhance affectivity and efficiency in the public sector. The demand side of e-government has gained attention from scholars and it has been argued that citizens' demand for e-government services does not meet expectations; hence affecting the e-government business case negatively. Do other internal and external e-government barriers affect value realization? How can they be eliminated? This study investigates formative evaluation as a method to ensure e-government value realization. The case is ex-post evaluation of value from digital post in a citizen service center at a Danish municipality and was conducted as Action Research. Barriers to digital post were revealed, addressed and eliminated during the formative evaluation process. Clear expectations from top management, assessments and disclosure of workers' behavior and commitment from managers proved pivotal in the value realization process. Further research into the internal e-government adoption processes and the impact from external factors (mainly from joint-up government) is needed in order to understand more profoundly the challenges for realizing value from e-government.

Keywords: implementation, e-Government, evaluation, adoption, local government, value, value, action research

1 Introduction

The challenges of realizing value from IS are widely recognized. Ward et al. (2007, p. 325) conducted a survey of perceived satisfaction with IS projects among 102 private and public organizations. Only 45% claimed success with more than half or more of their IS projects. Analysis of U.S. local governments surveys concluded that ‘few governments reported any changes that are attributable to e-Government, especially changes involving cost impacts’ (Coursey and Norris, 2008, p. 10). Goldfinch (2007) argues, that one should be pessimistic about value from e-government. There is a need to address the organizational changes and desired value along with implementing IT systems. The Danish Government and the local governments agreed on an ambitious e-government strategy (The Danish Government et al., 2011). During the five year period, 40-50 public e-services will be mandated; the majority of communication with citizens and companies will be also be digital (mandatory).

E-government is described as multivariate and complex, covering a wide range of areas, actors (internal and external) and applications (Rose et al., 2012). It is commonly accepted that e-government research needs to be multidisciplinary to meet this challenge. From a comprehensive e-government literature review, Heeks and Bailur (2007) do not find much evidence of a multidisciplinary approach. They find a predominance of information systems’ research influence, no inheritance of critical views and only scarce studies based on solid empirical work offering practical recommendations. They argue that human, social and political elements ‘more easily become apparent during direct contact with data subjects and settings’ (Heeks and Bailur, 2007, p. 257). Yildiz (2012, p. 351) in his ‘Big questions of e-Government’ paper states that e-government evaluation ‘only focus on the measurement of the availability and development of web sites and on line services’. It misses the organizational and cultural change that is necessary for e-government to succeed.

This study will apply a multidisciplinary approach through empirical work and direct contact with data to address the organizational and cultural change. A formative evaluation model of e-government adoption in local government in an Action Research approach was applied. The adoption process was facilitated by interventions such as authority-based decisions, disclosure of civil servants’ work practices and by imposing governance on managers. This study is part of a research program on e-government value, which covers a variety of projects, methods and foci.

Research question: How can formative evaluation impact value from e-government? Can this evaluation model reveal generalisable factors that support or hamper e-government value realization?

2 Related Work

E-government, understood as the services, delivered to citizens etc. through the internet, can be measured in many different ways (as IS implementation, against anticipated objectives or in terms of efficiency), considering different phases of the e-government initiative (implementation or operation) and with different objectives (e.g. comparison, supporting decisions or understanding phenomena) (Luna-Reyes et al., 2012). Even though this e-government evaluation ontology is convenient, it leaves a gap between anticipated and actual e-government as it only defines one phase after implementation; ‘operation’. I will add the technology adoption processes to close this gap.

Public sector has an obligation to deliver accountability, transparency, equality and reliability in the services towards citizens and businesses (Chircu, 2008). She stresses, that evaluation of e-government should be based on multiple value dimensions, namely financial, social, political value and multiple stakeholders. Concluding, that there is a lack of consistencies in terms of value metrics and stakeholders included in evaluation research, she presents a unified multidimensional framework that covers all value dimensions and stakeholders (Chircu, 2008). This model is purely output-based. Luna-Reyes et al. (2012) suggest an evaluation model composed of not only output but also technological

characteristics, organizational form, institutional arrangements and contextual variables. Luna-Reyes et al. add value dimensions that extend the e-government perspective. Both models build on a positivist philosophy that perceives value dimensions as objective, value free and measurable. Other scholars are opposed to the unified model view. Carbo and Williams (2004) note the diverse subject matter areas that e-government is applied to and state that there is no one model for local government evaluation. Moreover, as e-government is agreed upon as being multivariate and complex Castelnovo and Simonetta (2007) argue that it is difficult to find an evaluation model that can be applied to all areas of e-Government.

From her literature review on e-government evaluation, Chircu (2008) finds that only a minority of studies was practitioner-oriented. Moreover, a vast majority of studies concern stakeholders outside of the practitioners setting, primarily citizens (Chircu, 2008). Evaluation of citizens' adoption of e-government applying behavioral models such as TAM, TRA or TPB (Bélanger and Carter, 2008; Carter and Bélanger, 2005; Horst et al., 2007) provide understanding of the citizen adoption process. Content evaluation of public websites and surveys of managers' perception of e-government value and barriers (Moon, 2002; Norris, 2005) constitute other models of evaluating e-Government. Jones et al. (2006, p. 2) claim, with support from many researchers, that most organizations 'have no ICT evaluation processes in place' Yildiz (2007) addresses the oversimplification of e-government and recommends to evaluate 'the processes that shape the management of e-Government' (p. 658). Luna-Reyes et al. (2012, p. 324) state that 'we still know little about the impacts and results associated with e-Government'. According to Ndou (2004, 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'. Carbo and Williams (2004) underpin that without appropriate evaluation models e-government may be costly and include political, operational and technology risks. External factors, governing e-government, as citizen adoption and web-sites, have been studied. Obviously, there is a need to understand internal factors. These studies provide useful knowledge in regards to comparison of e-government output but are of limited use for understanding e-government adoption. I have not found many scholars who see employees as key to e-government. Ndou (2004, p. 5) acknowledges the employees as an important actor; she states that 'the relationships, interactions and transactions between government and employees in fact constitute another large e-government block, which requires a separate and very careful handling'.

A constructivist evaluation approach, opposed to the positivist approach, can provide a more extensive understanding of e-government (e.g. Irani et al., 2005; Jones et al., 2006). Applying an action-based grounded theory approach (Glaser et al., 1968) in collaboration with two local governments in the UK, they aimed at 'seeking to increase the understanding and knowledge of e-government evaluation' (Jones et al., 2006, p. 2). This was done in an interpretive and inductive process leading to an understanding of 'social and human aspects of e-government evaluation' (Jones et al., 2006, p. 3). The studies led to important themes for evaluating e-government, namely decision making, evaluation methods, what and how to assess and how the practitioners perceive the evaluation process. Moreover, the dilemma of agency was stated to dominate e-government, which is also noted by Goldfinch (2007). A grounded approach was applied by Irani et al. (2007) with a series of workshops in the UK with e-government practitioners. The workshops inductively revealed the practitioners' perception of challenges in e-government of technological, social and organizational themes, e.g. lack of interoperability, shared services, legal issues and inter-governmental coordination and collaboration ('joint-up' government). Lack of interoperability and challenges with joint-up government is also argued by Bannister and Connolly (2012) to be major obstacles to e-government.

The degree of adoption of a new technology is argued to be dependent on the information decision process of an individual thus on relative advantages, compatibility, complexity, trialability and observability (Rogers, 2003). Gallivan (2001) argues that adoption can be understood as primary adoption at the organizational level and subsequent adoption at the individual level. He finds from an empirical study that managerial intervention and captive use facilitated the adoption process. From an empirical study Braun et al. (2010) state the importance of also considering the contextual factors at

the organization level, i.e. value management capabilities, integration into managerial processes and support from top management. Tyre and Orlikowski (1994) saw, that technology use congeal after a short time and that further adoption requires interventions into the organization.

Some researchers investigate one model to account for overall e-government value; others deny the existence of one such model. The full concept of e-government is not understood; hence knowledge about realizing value from e-government is sparse. The majority of e-government research conveys from a positivistic viewpoint and focuses on output, primarily related to citizens. Other scholars point to qualitative studies, applied to the social and organizational behavior that shapes the operations of e-government as a proper endeavor to further understand e-government. This paper outlines a qualitative study from a constructivist stance, with the aim of understanding the role of social and organizational behavior to ensure value from e-government. Going back to the different ways, phases and objectives of evaluating e-government (Luna-Reyes et al., 2012), this study investigates evaluation of anticipated goals of e-government operations. This is done with the purpose of understanding phenomena, that hampers or supports anticipated value realization.

3 Method

3.1 Methodology

Action research (AR) is a research methodology that comprises a genuine collaboration between researcher and practitioner; where the researcher helps solve the problems of the practitioner while generating knowledge about the research field. AR originates from organizational research and is a research methodology based on a process of stimulus response, where a certain action in a particular setting creates a response where the social action can be connected to a causal model (Baskerville and Wood-Harper, 1998). It has the ability to create knowledge about deficiencies in the practitioners' world that research of a more positivist nature fails to do (Susman and Evered, 1978). E-government is complex, rely on social and behavioral factors and reasons for failure to realize effect have not been adequately addressed. With its explorative yet rigorous nature, grounding in principles and methods (Davison et al., 2004), AR is an appropriate methodology to investigate IS in organizations (Baskerville and Wood-Harper, 1998), thus to expand on the knowledge base of value from e-Government. AR is conducted in this study as a cyclical process with five phases, namely diagnosing, action planning, action taking, evaluating and specifying learning (Baskerville and Wood-Harper, 1998). In this study the practitioners' real world problem is to gain effect from an e-Government initiative, digital post. An evaluation framework, based on user involvement, specification and measurement of value in formative iterations changing IT systems and organization, guides the AR study (Hertzum and Simonsen, 2011).

3.2 The digital post system

Digital Post was designed, developed and implemented by the Danish Ministry of Finance to make communication between public sector and its affiliates more efficient; it constitutes a major cornerstone in the current 2011-2015 e-government strategy. 'By 2015, we expect to be able to send 80% of all correspondence to citizens in digital form. This will save billions of kroner on administration throughout the public sector' (The Danish Government et al., 2011, p. 14). The system is basically an e-mail system in which identified actors can communicate encrypted. Municipal staff prints mail to digital post through an output manager application (OM). The OM sends a digital letter if the citizen has registered in digital post, and if not, the OM sends a physical letter. The municipality saves DKK 5 per digital letter. Citizens access digital post through the Danish national public portal borger.dk using the national eID solution with the social security number (CPR). Digital post is free of

charge for citizens. State funding of municipalities was reduced in 2013 by DKK 103 million due to estimated municipal postal savings (The Danish Government and LGDK, 2012).

3.3 The project setting

I made a collaboration agreement with the municipality of Assens (41.000 citizens) with the aim of enhancing value from digital post in the Citizen Service Centre department (ACS), i.e. facilitating the adoption process. Since implementation in 2010, Assens had virtually had no value from digital post. ACS implemented digital post in 2010. After two years they had a suspicion that digital post was not used by the staff and they had not seen any drop in postal costs. In 2013, the municipality had DKK 0.8 million cut from state funding due to expected reduction in postal costs from the digital post system. ACS has two managers, and the department of 40+ employees is divided into 8 teams. The teams work within a range of different public sector administrative services, such as issuing health card, passport and driver's license, registration of addresses, handling of citizen's debt, funeral cost aid, welfare payments fraud, welfare payment and retirement aid. The project period was March to September 2013.

3.4 Data collection and analysis

Data collection was performed to inform the study and guide the activities. However, I very consciously used the various data collection activities as interventions into the organization, e.g. surveys, which provided me with an opportunity to relate to all staff. Other example is worker's registration of physical mail (Figure 1), where a physical form on the individuals' desk disclosed the individual behavior for colleagues and managers, which would impact the personal reflection on work performance. Counting of mail from Facility Management served as triangulation, but also as a reason for workers to not 'hide' the cases of physical mail. These interventions were agreed with head of department. The municipality implemented the OM more than two years ago. To 'open the window' for new adoption (Tyre and Orlikowski, 1994), strong interventions were needed.

Brevtype	Antal (sæt en streg for hvert brev)
Afgørelse cpr. sag	11
Afslutning af sag	1
Brev til loživært	1
Indkaldelse til samtale	1

Figure 1. Completed form for registering physical mail.

3.4.1 Quantitative data

The number of mail was counted on a weekly basis from the Facility Management department. Postal costs were drawn from the economy system.

The number of transaction was retrieved from the OM system on a monthly basis. Transaction data were merged with data of users from AD.

A survey of e-government readiness and attitude was conducted with response rate 34/42. Questions were asked about if and how they, as citizen and worker, used digital post and their attitude towards e-government and digital post.

Registration and specification of mail was done by staff on weekly bases. Figure 1 displays a registration form that lay on the desk of every employee during the project.

I conducted a survey on workers' system use, response rate 23/42. Staff was asked to list all the systems that they use frequently. This was done to shape the working context for imposing digital post as a new system and to shed light on the interoperability issue.

3.4.2 Qualitative data

Two focus group interviews with 6+7 participants were conducted, following guidelines from Johnston et al. (1995), audio taped.

Four semi-structured interviews, with two managers and two office workers, about evaluation of the project were conducted by a communication worker at Assens, transcribed. Two semi-structured interviews, with head of department and two managers, specifying learning, audio taped.

Two introduction meetings with employees, two managers and head of department, audio taped.

Notes from observations in the field and my diary.

I provided the two managers with a diary to take notes during the project and to reflect on their own learning. This was done to ensure more validity by having them specify their own learning instead of having me to facilitate the extraction of learning, which could lead to manipulation and misinterpretation (Baskerville and Wood-Harper, 1996).

A 22-minute movie was recorded by one manager and me with participation of workers, managers, head of department, head of division and supporters from the vendor. The movie was shown to all employees in the division in September 2013. **Error! Bookmark not defined.**

4 Results

The initiating phase was guided by both recommendations from AR regarding the research client agreement and the evaluation framework. The principles of the collaboration were made by me and the head of department. The managers, however, had the final decision on the collaboration. One intervention was grounded in my former empirical studies and in research (Braun et al., 2010); managers were to be in charge of every decision and drive the adoption - not the IT manager or me. Based on research (Chircu and Lee, 2005; Gallivan, 2001), I wanted to investigate the authority-based decision making. Head of department and head of division were instructed to 'issue orders' and not - as normally is the case - to be absent, vague and unclear. Research goals were stated in the agreement. One of the pitfalls of AR is the failure to contribute to research that reduces the effort to mere consultancy (Baskerville and Wood-Harper, 1996). One prerequisite of an AR study is that the researcher must 'account for the values, beliefs and intentions of the client employees' (Davison et al., 2004, p. 71) and get close to practice to be able to collect rich data. I had to be treated as an employee during the project with desk, keycard and access to lunch buffet.

The number of messages through the OM went from 8 in March to around 1000 in June and July, performed by 5 workers in March and nearly all workers through July (Figure 2).

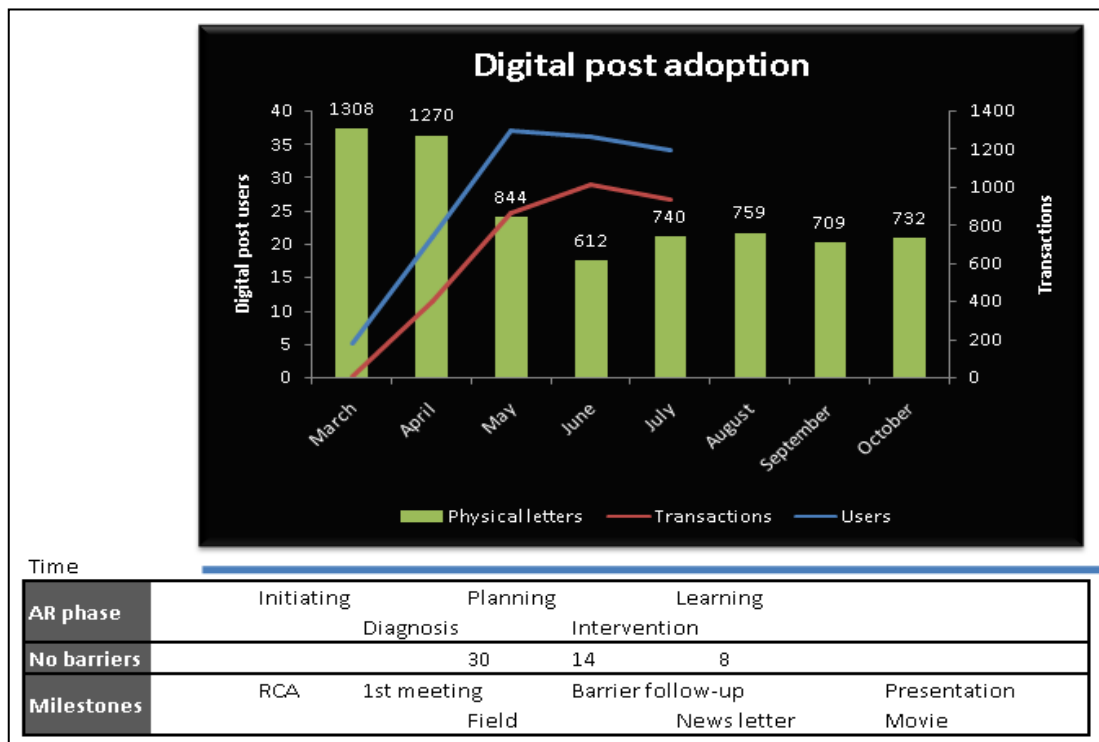


Figure 2. Use of digital post

4.1 Diagnosis

During my first day at ‘my desk’ talking with staff about work practice’s, they revealed that only a few of the ACS employees had the OM installed. The IT people explained that when they rolled out the OM in 2010, they asked workers if they needed the application and only very few confirmed.

Diagnosis was done by analyzing transaction data. Diagnosis revealed a very low adoption rate of the OM after the initial technical implementation. This worked as the overall baseline.

I conducted a survey of office workers’ e-government readiness and attitude showed skepticism and negativity towards digital post and a very low rate of workers’ own use of digital post as citizen. Managers observed a variety of ‘bad excuses’ (their expression) for not using digital post.

When I’m around and ask about why mail is sent physically and not digitally, I can hear that there is opportunity for development both in attitude and in terms of skill. So there will be enough to deal with when you come. (Karen, manager, e-mail, April 25, 2013)

4.2 Action planning

We had to address the skepticism towards digital post to be able to involve workers. This was done by offering hands-on practice with digital post, both as worker and as citizen. The digital post system does not contain a test feature. We decided to do online training using workers’ own citizen CPR, eID, and digital post as ‘citizens’ to provide a real test environment. To do this we also had to have the workers register as citizens in digital post, which also could be seen as violating privacy.

On the basis of the survey, from the diagnosis phase it was possible to design focus groups. I planned two focus groups, distributed on age and with different attitudes to e-government in each group. Both groups included workers with positive and negative attitudes and different skills. The focus groups were planned solely to contribute to the research purpose and accounted for more than three working

days in total time spent by workers. However, the focus groups turned out to also release some of the insecurity and tension about digital post hence reduced the skepticism and negativity.

We had to strike a balance between giving workers the necessary instruction and not blowing it up to a big cumbersome 'course'. One manager found the OM manual from the vendor. It was 40+ pages explaining a lot of technical issues that was not necessary for workers' initial use; her opinion was that it would make it seem too complex. We ended with our own short 'manual' with one screen dump and two arrows and explanations on one page. We would have workers send digital post to themselves as citizens and peer-to-peer training.

Knowledge about barriers to digital post could be extracted from the work practices where workers would use physical mail instead of digital post. In order to identify these we planned to have workers to register every physical mail with a type indication in one week.

The essence of AR is change through action (Davison et al., 2004). ACS is a busy department where workers serve customers and daily operations. As stated by Chircu and Lee (2005), it is the daily work, that matters for workers and not applying a new IT system, as digital post. To ensure workers' attention we planned to focus specifically on the transformation during one entire week. This would include a kick-off meeting with head of department, peer-to-peer training, daily measuring and displaying of metrics, elimination of barriers, focus groups and a closing meeting with head of department. I would 'move in' and act as a full-time digital post consultant towards the workers, listening to issues and removing obstacles. The managers and I would have short meetings every morning and afternoon to be able to make the necessary decisions as quickly as possible.

An evaluation report was elaborated by me on a monthly basis. The report was a current evaluation of the adoption and included quantitative and qualitative evaluation on department, team and employee levels. The report also included a list of barriers to adoption, together with an action plan, stating responsibility for action towards barriers (primarily the two managers and the researcher). The report stated advice from me to the managers to decide from.

4.3 Action taken

The head of division announced the digital post project in the monthly meeting for all departments stating that the goal was to digitize all mail in the municipality starting in the ACS department.

Due to a misunderstanding with managers, the one week registering of physical mail was conducted three weeks in a row. Apparently the workers were not bothered by this and we decided to have workers register mail every week, as one manager notes in her diary:

Weekly forms from workers helped to push the process in the right direction, giving rise to consideration of whether mail needs to be sent physically and provides manager with knowledge of why mail is sent physically (Laila, manager, diary)

Another misunderstanding made the adoption process start before anticipated. The workers had heard about the agreement with the researcher. They had also received the one-page 'manual' for the OM system. Two weeks before project kick-off, one manager wrote to me:

For the welfare team it has already become a sport not to send any physical letters at all - so it's perfect. (Karen, manager, e-mail, April 18, 2013)

At project kick-off, the head of department (with reference to the head of division) stressed the importance of transforming all mail to digital post. He used the phrase 'this is an order' and referred to the cut in state funding. Several workers commented on this at lunch and said that if he had told them that earlier they would have done it. As one manager notes in her diary after the kick-off meeting:

After the [kick-off] meeting I was surprised that so many workers were not aware of what we expected from them regarding digital post. (Karen, manager, diary)

The first barrier was presented from several workers at the kick-off meeting:

It seems silly that it is more expensive for the municipality to use digital post than to use ordinary mail. (Lone, office worker, movie)

She referred to an OM configuration that made it more expensive to use the OM system. Sending a physical letter, OM would use A-mail only. After the meeting, the digital post consultant (me) contacted the vendor's support team and had this setting changed to the cheaper B-mail. This first barrier was eliminated the first morning. The registering of mail revealed four types of barriers. During the week, a total of 30 barriers were revealed; of these, 7 barriers awaited action from central government, 5 barriers awaited action from externals (e.g. system vendors), 2 were municipal IT projects and 16 were department projects (managerial decisions, work process redesign, etc.). Several of the barriers were eliminated during the week. For some barriers, I contacted the OM vendor's support or other system vendors to find solutions. Through experimenting, some of the systems were able to be integrated with the OM system, e.g. the case handling system. It turned out that approximately two thirds of mail had attachments from different systems; hence this was a significant barrier. Staff taught each other how to manage attachments and changed work processes accordingly.

The number of digital post transactions distributed in teams and workers was published during the week as a 'hit list'.

Only 5 workers had used the OM system before the kick-off week, increasing to 21 workers at the end of the week (half of the department). The digital post consultant was in dialogue with every worker in the department to ensure that training was done and work tasks were discussed regarding digital post.

The focus groups revealed skepticism and negativity towards digital post, mostly because they found it to be a poor service for citizens. The workers expressed concern about the elderly and institutionalized citizens. Skepticism also derived from the use of the CPR. Staff needed to enter the 'Civil Registration System' on a daily basis performing their tasks. When entering the system, the user needs to accept conditions for the use. Part of the text reads:

Irregular lookups, queries or disclosure of information from the system is punishable by law and may also get legal employment implications (opening dialogue box, the Civil Registration System)

Workers expressed uncertainty about their right to legally retrieve CPR from the system in order to use this in the digital post system.

After the initial week, I left town and the rest of the follow up on barriers was to be done by the managers. I issued three value realization reports from May to August. The report contained measurements of digital post transactions per team and worker, recommendations towards specific teams or specific workers and a list of barriers. The barriers were supposed to be addressed by the managers, i.e. discussion of solutions, decisions of action, temporality and responsibility. The first value realization report in May contained a total of 14 barriers which were to be addressed by the municipality. I advised the managers to meet and take action on the barriers (integration into managerial processes, Braun et al., 2010). Some barriers were eliminated but there was no systematic approach. I advised the head of department to allocate an IT project manager (project management skills, Ndou, 2004) for the second iteration of the value realization report. She scheduled meetings, facilitated the discussion on how to remove the barriers and which action to take. Most of all she followed up on the progress. Both managers agreed afterwards that this was pivotal for their continuing elimination of barriers. At the end of July, 8 barriers remained.

One barrier was discovered by an employee who did not understand why the OM system treated digital post to a subgroup of recipients differently. She told her manager who discussed it with the vendor's support. It turned out that the municipality *did not* send digital post to this group due to a configuration error in the digital post system.

In the second status report, we discovered a growing number of transactions made without CPR; 16 in April and 45 in May. This would force the message to be a physical letter, thus a slipped effect. One of the managers made a decision to make the CPR field in the OM system mandated and the problem was solved.

4.4 Evaluation

The evaluation was guided by the framework from Hertzum and Simonsen (2011), see Figure 3. Initially, the head of division and the managers specified the anticipated value: postal costs, **Error! Reference source not found.** (direct outcome), numbers of transactions and numbers of OM users (Figure 2) and types of physical letters (to reveal barriers, Figure 1). As depicted in Figure 3, the evaluation is conducted as an on-going interaction between assessment and realization, depicted by the double arrow. The realization activities constitute changes in system configuration, in organization, in work processes etc. based on reflections from assessments; followed by actual work in the changed setting. A new assessment proceeds the realization phase. The initial assessment showed that all letters with attachments from the case handling system was sent as physical letters from the workers. A short manual was elaborated and peer-to-peer training was quickly organized and new work processes were established. The next assessment showed a dramatic drop in physical letters due to attachments from the case handling system.

The realization, however, can also lead to specification of a new assessment (the arrow from ‘realize’ to ‘specify’ in Figure 3), which is again followed by assessment and realization. When we found out that workers did not always use the CPR, we had to specify an additional assessment in order to keep track on this unanticipated behavior.

During the study, ACS increased the number of transactions from very few to around 1.000 monthly and the municipality moved from rank 79 to 38, in number of transactions per 1000 citizens (98 municipalities in total). The municipality has now adopted this formative evaluation as model for the remaining 30+ administrative departments.

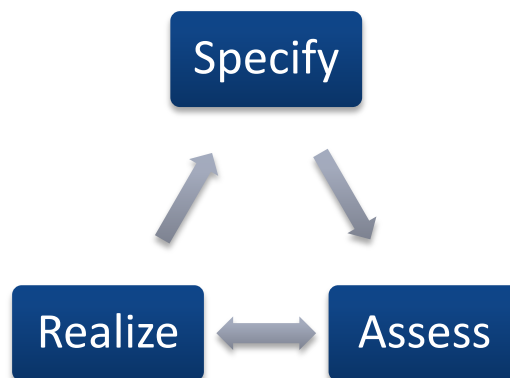


Figure 3. The applied evaluation model (Hertzum and Simonsen, 2011).

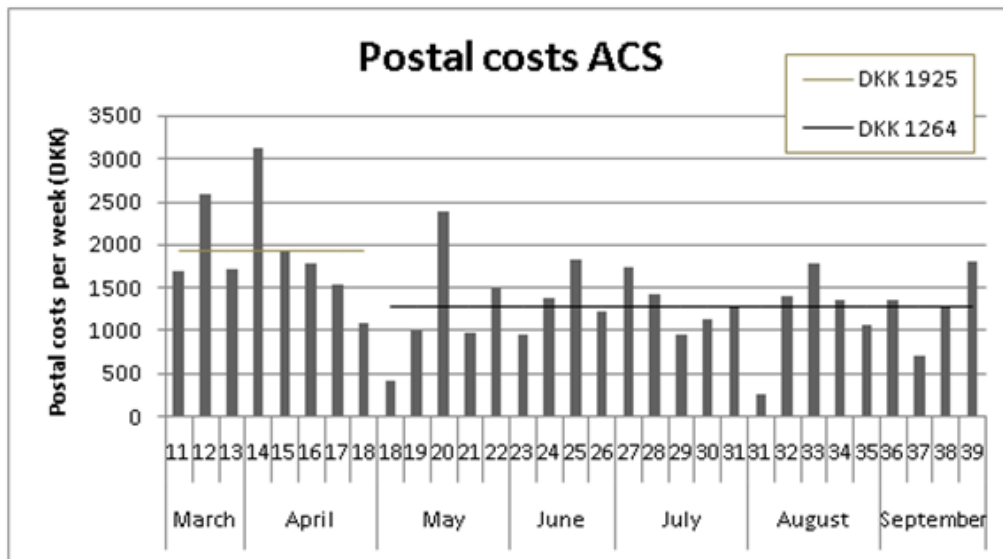


Figure 4. Weekly postal costs in the project period from March to April. Average costs is DKK 1925 per week until April, which drops to DKK 1264 per week from May.

4.5 Specifying learning

The study revealed specific types of barriers to digital post, see Table 1. Many of the barriers were external, of which the municipality only had very limited impact on, if any. Of the internal barriers, the municipality had control, but had only limited capabilities regarding configuration of the various systems and the overall internal interoperability.

Barrier type	Explanation	Examples
External work processes (mainly other public organizations)	Processes, based on physical documents, stamps, signatures etc. that involves the municipality, legislative issues and missing awareness from externals	Housing loans, where legal text must be on the back of the loan document (Ministry of housing), cannot be send digitally.
External technical infrastructure issues	Subject matter systems not integrated with digital post and the complexity of the digital post system	The welfare aid system (vendor has monopoly), used by all municipaocities. Configuration failure in the digital post system.
Internal technical infrastructure issues	Local systems interoperability and configuration issues	Case handling system was not configured correctly
Managerial decisions	Internal work processes involving physical documents or other communication channels	ACS sent physical tickets to elderly people to pay for therapi, workers promise costumers not to send digital letters

Table 1 Types of barriers found in this study

The specified learning, elicited from interviews with head of department and managers, focused on assessments, role of management and involvement of workers. Assessments were agreed upon as pivotal for the formative evaluation leading to eliminated barriers and subsequently enhanced value realization. Expectation clarity (in form of orders) both from head of department towards managers and managers towards workers had the department focus on the digital post value. The importance of the operational managers as being in charge of the change process (and not the IT people) was stated by all. The involvement of the workers and having them to reflect on their own behavior together with on-going follow-up from management turned out to be necessary to maintain momentum in the

realization process. Moreover, the ‘disturbance’ of the researcher and my motivational and creative capabilities together with the ability to create good personal relationships with all levels was stated as pivotal, especially the ability to meet the workers with respect and curiosity. These competences is stated by Mumford (2001) as a prerequisite for succeeding with action research. Removing the first barriers within hours created a certain momentum. The high momentum and the agile decision making was stated by the head of department as very uncommon for the organization, thus it made a great impact on the engagement of the participants.

5 Discussion

5.1 E-government infrastructure

According to survey data from this case, staff uses between 10 and 20 systems every day to perform work tasks. One remaining type of barrier to adoption constitutes other systems being incompatible with digital post. In this study, the municipality needs to use at least three monopoly systems that are incompatible with digital post. Failure of interoperability has roots in the Weberian bureaucracy model and is recognized as a true barrier to e-government (Bannister and Connolly, 2012).

Trialability will stimulate adoption of new innovations (Rogers, 2003). Digital post was designed without the opportunity for staff to experience use of the system without involving real citizens. Together with the technology illiteracy that may characterize many skilled staff, this will induce uncertainty, hence slower the adoption.

5.2 Policy issues

This case revealed several policy issues, including both failure from legal recognition of digital documents and privacy issues.

Failure to acknowledge digital documents is obviously fatal to digital post. The case revealed a number of situations from different governmental domains where digital documents was not acknowledged. The trustworthiness of this e-government initiative is again under strain when civil servants experience that other parts of government do not recognize digital documents.

Office workers cannot try the system without involving real citizens. However, the most serious obstacle is the uncertainty about whether the civil servant may extract CPR from the Civil Registration System without committing a crime. The legal department of the Danish Digitization Agency confirms that civil servants may do this, but they have not gone public with this. The law abiding gene is very strong amongst administrative workers in the public sector, thus confirmation from the Danish Data Protection Agency and the Interior Ministry, which have the jurisdiction of the Civil Registration System, would resolve this.

Many researchers find legal barriers to e-government (Gil-Garcia and Pardo, 2005; Ndou, 2004; Norris and Reddick, 2012).

5.3 Human capital development

A major challenge of an e-government initiative is the lack of IS skills (Ndou, 2004). Local government’s tasks are complex and multivariate. How to operate the numerous different systems that are needed for task handling is a challenge. Office workers need knowledge about how to semi-manually integrate different systems. Moreover, staff needs the ability to judge and disclose when systems are incompatible and to try new and creative solutions.

The second issue lies with configuration of systems. Why is a system configured to send the expensive A-mail for three years without anyone noticing it? The vendor knows the configuration options but he has no incentive to facilitate use of the system beyond the contract. The economical constraints of the public sector makes municipalities buy cheapest possible, which leads to mere technical implementations. Systems are typically implemented by vendors and the local IT department from a default IS configuration scheme. It is pivotal for e-government initiatives that the business manager is in charge of system configuration and has the necessary capabilities to do that.

Capability of producing the necessary and sufficient business intelligence (BI) is necessary to be able to document value and inform adoption process. In this case there were insufficient capabilities to extract, manipulate and present the BI data. The BI data revealed a potential major breakdown caused by workers not using CPR in the OM. This led to an intervention that stopped this.

Furthermore, the case revealed lack of project management and change management capabilities at the management level. The digital post consultant (I) acted like the 'visionary change agent' that Chircu and Lee (2005) states as one of six e-government adoption key success factors. This is a challenge to local governments with busy work schedules.

5.4 Change management

It is vital for managers or workers to adopt an e-government initiative that it is not voluntary. In this case, the Danish government made a strong signal enforcing the digital post law, and making it mandatory for all citizens and businesses to have a digital post box. Digital post has existed since 2010 but only in 2013 was the state funding of local governments reduced according to the estimated postal costs, which have had an effect on local governments' CEOs. This was also the starting point for this case that the municipality had to cut costs or reduce welfare service elsewhere. The message was given as an order and was not questioned by managers or workers. This supports the response to authority claim as a major impact on adoption (Cooper and Bhattacharjee, 2001), which is also stated from a multiply case study by Chircu and Lee (2005). Secondly, the study shows how important it is to integrate the current follow-up into the managerial practice as stated by Braun et al. (2010).

The skilled administrative worker in the local government carries a long and strong tradition of physical writing and serving the citizen. The focus groups in this study proved that making the mail digital conflicts with these values in many ways. Rogers (2003) asserts that adopting a new value system is a very slow process.

Captive use is also stressed as an important adoption factor (Gallivan, 2001), which was proven in this case by the mandated use of CPR. The two vendors in the market of the OM both declare that they will not enforce this feature on customers. Another municipality states that they will not restrict the freedom of the workers.

The case of the digital post and use of the OM is characterized by a high degree of ease of use. As one worker says to the manager:

This is one of the easiest and smartest systems, we have ever been put to. (Vita, employee (age 60+) to manager, manager's diary)

This was confirmed by many workers throughout the project. The greater the perceived relative advantage is, the faster the adoption Rogers (2003).

5.5 Partnership and collaboration

Partnership and collaboration are important elements of the e-government development process (Ndou, 2004). Collaboration with system vendor was important regarding support for configuration knowledge and export/interpretation of data.

Collaboration with other public institutions was confirmed in this study as important for the adoption process. Several of the adoption barriers originated from lack of recognition of digital letters from other public institutions. This silo-ization is recognized by Bannister and Connolly (2012) as a major barrier to e-government.

5.6 Strategy

Partly from this study and as a reaction to economic consequences from reduction of state funding due to digital post, CEO and the executive committee decided to base the further adoption of digital post on the results from this study. The existence of an active strategy as stated by Ndou (2004), based on measurements, targets and governance is supported by the empirical findings.

5.7 Leadership role

Since e-government is a complex process, accompanied by high costs, risks and challenges, public organizations are generally resistant to the initiation of change. (...) Leadership is necessary before, during and after project implementation. (Ndou, 2004, p16)

This study explicitly 'instructed' managers, head of department and head of division to act and perform management and leadership. Especially articulating the expectations towards staff and clearly 'giving orders' of how to perform work tasks was proven vital. This was explicitly mentioned by managers when specifying learning, i.e. addressing head of department and head of division. Staff also referred to 'the order' many times, i.e. addressing the managers and head of department. The disclosure of measurements and status reports made it apparent to others, e.g. if one manager had not made a follow up on specific barriers. This integration of how to enhance value from e-government into the managerial processes was found to be key in e-government (Braun et al., 2010). In the study, the managers exerted management, which was reflected upon both by managers themselves and staff, as a change, that enhanced perceived work satisfaction. This effort mitigated the role of agency, which is said to be significant in e-government (Goldfinch, 2007; Jones et al., 2006).

6 Conclusion

In this study, I show how a formative evaluation model of e-government adoption can enhance value from a specific e-government case: Adoption of digital post in a municipal citizen service center. Applying the evaluation framework in an Action Research approach revealed various barriers to digital post, within technical infrastructure (lack of interoperability), legal issues (unclear regulation and uncertainty about privacy issues), lack of human capabilities (project management, data management, systems configuration), change management issues (conflicts in value systems, resistance to change, vague and unclear management) and collaboration issues (other governmental institutions being opposed to digital post). To overcome barriers within the municipality, the study introduced interventions as clear leadership and management, authority based decisions, disclosure of individuals' behavior and clear e-government strategy, combining measurements with on-going changes in systems and work practices. This was overall done in a mutual collaboration between researcher and managers, but foremost with respectful involvement of staff.

The adoption of digital post increased to saturation, but postal costs only dropped one third. A number of e-government adoption barriers remained as unsolved. These barriers originated primarily from external factors. Interoperability problems (systems that could not integrate to digital post), unclear legal issues and governmental institutions, that did not acknowledge digital letters constituted remaining barriers.

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Paper 5

Berger, Jesper B. (2014). Mandatory e-government has arrived: The silent protest from staff calls for the committed scholar – resistance must never be futile! Paper presented at the The 25th Australasian Conference on Information Systems, Auckland, New Zealand.

Mandatory e-government has arrived: The silent protest from staff calls for the committed scholar – resistance must never be futile!

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Abstract

The great potential in e-government - the provision of public services to citizens through the internet - is widely recognized by governments and expectations of the benefits are high. E-government research has been preoccupied with its evolution, public websites and citizen adoption, from a 'natural growth and voluntary use' perspective. Little attention has been drawn to mandatory e-government. This paper reports from an exploratory study on a Danish mandatory e-government initiative – enforced e-communication between local government and citizens. Civil servants' perception was investigated through two Focus groups. Civil servants reported that some citizens find it really hard to manage computer and e-communication. Moreover, the civil servants feel that they are not allowed to offer the necessary assistance, which makes them frustrated. They find that especially weak citizens may lose welfare benefits due to e-communication. This has a negative effect on motivation and work life quality and may affect the public sector ethos. Increased efficiency by mandatory e-government may be the next hype. How will it affect citizens, civil servants and the 'public good'? How can it ensure that citizens' rights are not violated? This paper calls for critical research on e-government impact and for e-government scholars to play an active part ensuring ethical e-government.

Keywords

E-government, critical research, mandatory, local government, employees

INTRODUCTION – RESISTANCE IS FUTILE

E-government, the provision of public services towards citizens through the internet, has been pursued with great effort by governments throughout the last decades, mainly to mitigate an increase in public sector spending. E-government has over time suffered from IT development and implementation failure and poor usability (Kumar et al., 2007). Later challenges for governments have been to provide the necessary change management efforts to achieve benefits from IT-investments (Ndou, 2004). Further, studies show a lack of demand (Gauld et al., 2010). Creating demand may take time, as noted by Bannister and Connolly (2012): 'Changing a culture can take a generation. Changing people's behavior may be impossible, even in the long run.'. This patience may not be allowed for by governments that are blinded by New Public Management (NPM) efficiency goals. The Danish government launched a national e-government strategy based on legal enforcement and captive use (The Danish Government et al., 2011). The hard facts cannot be ignored; numbers of transactions and digital messages have doubled from 2011 to 2013 (see figure 1) and are estimated to double again in 2014. General Director of the Digitization Agency claims Denmark is world leading and that a huge global interest has been generated. In the 1970's, when new technologies were introduced to make industry more efficient, employees protested against lay-offs and the imposed changes in their work life, supported by trade unions (Kensing and Greenbaum, 2013). Mandatory e-government may introduce similar changes to clerical staff and/or citizens. Up till now, there has been no e-government 'spring'.

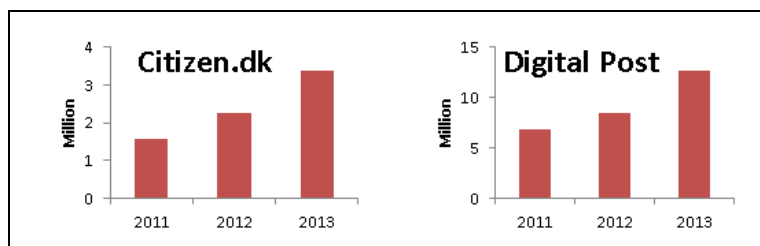


Figure 1 Number of On-line transactions on national portal (left), number of electronic messages from public sector to citizens (right)

An empirical study proved that mandated use ‘is one of the best things one can do to increase the likelihood of the [e-government] initiative’s success’ (Chircu and Lee, 2005). The dominating view by e-government scholars seems to be that e-government - almost by nature – has to be voluntary for citizens. AlAwadhi and Morris (2008) simply state that ‘e-government services are highly voluntary’. Axelsson and Melin (2012) state that: ‘Governments cannot actively stimulate or even force usage in the same way as a private organization can order employees to use a certain IT system.’. From this belief, it follows that citizen adoption is key to e-government; hence a major stream in e-government research is devoted to establish in-depth understanding of what makes citizens use e-services. Prevailing studies are based on psychosocial models (e.g. the technology acceptance model, TAM and variations), describing how factors such as perceived usefulness and ease of use will affect citizens’ adoption. The models rely on the citizens’ *decision* to use a given technology, which may not apply in a mandatory context. The feeling of how one would eventually react as a theoretical option may be very different when use is imposed. Luna-Reyes et al. (2012) state that ‘we still know little about the impacts and results associated with e-Government’. Scholars argue that NPM values dominate e-government strategies, considering e-government e.g. ‘as a linear process of change which leads to more efficient and less costly organization management’ (Cordella and Bonina, 2012).

The Borg forces other species into their collective group ego, which induces loss of individual identity. The ultimate goal for the Borg is to achieve an unemotional, mechanical perfection. This is achieved through forced assimilation, a process, which takes individuals and technology, enhancing and controlling them. Negotiations or reasoning are unheard of, resistance is futile (The Borg - Wikipedia)

No research is value free. I admit to the stance that society must be governed by a public sector ethos. Forced assimilation is not acceptable, negotiations and reasoning should be the rule and resistance should be stimulated as a means of giving people a say. The weak parties that are affected by e-government initiatives, being citizens, who are dependent on public sector services and staff, who’s work lives are affected, has the right to be involved in design and enactment. E-government research plays a crucial role ensuring facilitation of an informed process and offering the necessary methods and techniques to serve the ‘public good’. This paper presents an exploratory study of civil servants’ perception of a mandatory e-government initiative from a critical perspective.

MODELS TO SUPPORT THE ANALYSIS

Karlsson et al. (2012) have synthesized eight different goals from UN and U.S. documents concerning principles for e-government development. The first goal, ‘E-services should be usable’, is about reducing the barriers that citizens face in their contact with public sector; the objective is to make it easier for the citizen. Goals two and three are concerned with government efficiency; government should be able to reduce costs in the operation of the e-services, which both include work processes, management and systems, but also the development process. The fourth goal is concerned with efficacy, which the authors describe as ‘relevant for the users’, which is both citizens and civil servants. The fifth goal is about rapid response to citizens’ needs. The sixth goal is concerned with citizens’ trust in e-government services. Governments should develop e-services that are trusted by citizens’. Goals seven and eight are concerned with democratic values, i.e. transparency, accountability and participation in political decision making, which apply both to operation and development.

The values embedded in the actions performed by public sector has been described as ‘public sector ethos’ (Pratchett and Wingfield, 1996) and even though this has been criticized for reflecting public sector in a too narrow and positive way, it serves as a suitable background for understanding and analyzing the implications of e-government on the public sector. The public sector ethos comprises five generic features: Accountability, meaning that civil servants are expected to accept the legitimacy of political decisions and actions of government and fulfill their work accordingly, whether they agree or not; they expect a similar commitment from civil servants in other parts of the public sector. Second, bureaucratic behavior means, they should perform honesty, integrity, impartiality and objectivity. Thirdly, civil servants are not restricted to managing their work tasks; they work for the ‘public good’ and share the belief that the organization as a whole serves this public interest. Fourth, civil servants are not in it for the money, they feel rewarded and are motivated because they do something good for the community. Finally, civil servant must exert various loyalties, some of which will be characterized by inevitable conflicts. This includes loyalty to the national and local government and to the public sector as such, to the local community, to the profession and to individuals such as the manager and the citizen.

CASE SETTING

The Danish e-government strategy is twofold; 70+ services will be mandated electronic (captive use) and 80% of public sector communication will be digital by 2015. This exploratory study focuses on digital communication. Digital Post is a type of ‘reliable delivery system’ which is characterized by ‘specialized centralized tools for

delivery, which mean electronic equivalent to the postal services with all appurtenances' (Mates et al., 2013). The Digital Post system was provided by the Danish Ministry of Finance in 2010 with the aim of reducing public sector postal costs. A digital message reduces direct postal costs by \$1 and the equivalent due to saved time. The Danish government expected a \$200m cut in postal costs annually, but at the end of 2011, only 1 in 5 citizens had registered. The Danish parliament passed the Public Digital Post law in 2012 (with a big majority and no against-votes) that made it mandatory for citizens and businesses to receive electronic messages from public sector and designated the same legal status to digital messages as physical letters. It follows from the law that a letter is regarded as received by the citizen, with all its legal implications, when it is sent digitally from a public institution. From 2013, funding of public institutions was cut according to the estimated cost reduction.

The citizen accesses Digital Post through the national portal 'Citizen.dk', applying the national eID 'EasyID' by entering the social security number, a personal password and a dynamic passcode that depends on a six-digit code, prompted by EasyID. The passcode is found on a personal (physical) 'passcode-list'. Citizens are accountable for having access to Digital Post, i.e. a valid EasyID-account (should be applied for and activated), a valid passcode list, access to a computer with internet access, EasyID installed with latest Java up-date, a browser and a printer to be able to print and sign forms from public sector. Citizens have free access to computers at the municipality and libraries but must pay for print. The state accounts for Citizen.dk, EasyID and Digital Post to the firewall of the public institution. The public institution accounts for the integration to Digital Post, e.g. sending messages through an output manager application, integrated in the word processor, where staff enter the social security number as the 'address' of the citizen. E-mail and text alerts to citizens can be configured in Digital Post.

The study was performed in the Citizen Service Center of a Danish local government with 42.000 citizens in the outskirts of Denmark. Every Danish local government has a Citizen Service Center. Citizen Service Centers are the municipality's direct contact with the citizen. Besides offering first level service in opening hours and by telephone, they perform more basic case handling of applications, e.g. driver's license, passport, health insurance card, marriage administration, housing loan, identity card, and different pension aids. They handle debt to the municipality and welfare fraud investigations, payment and control of the unemployed and sick citizens and registration of citizens' movement in the national population register. The Citizen Service Center covers contact with a variety of citizens, both in age and life situations; and both citizens with and without special needs. The Citizen Service Center involved in this study comprises two sections (with four teams each), two managers and 40+ employees, only staff from one section was engaged in serving citizens directly; the other section had primarily telephone and written contact.

RESEARCH APPROACH

Prior studies by the researcher in another but similar setting had revealed that use of e-communication was hampered by resistance from clerical staff. Data indicated that part of the resistance was grounded in the concern for the citizen. This could be interpreted as a 'legal' excuse to resist change. In the present study, therefore, one of the goals was to gain further insight of the clerical resistance. Focus groups are often applied to obtain further knowledge about a phenomenon and they provide insight into complex matters (as e-government) because the participants 'both query each other and explain themselves to each other' (Morgan, 1996). More importantly, focus groups has the ability to give voice to weak groups (Ibid.) as clerical staff, being lowest in hierarchy. Furthermore, by using focus groups, it is possible to assess the extent of consensus and diversity. Focus groups have been applied in critical IS research (Stahl et al., 2011) and have been found valuable in e-government studies (Axelsson and Melin, 2007).

Sampling was prepared by performing a survey on background data, e.g. age, experience, work tasks and an assessment of the 'e-government use' and 'attitude' profile. The former study indicated elderly staff was more critical. The scope was to explore e-communication from a critical viewpoint, hence representation was important. Thus, only participants older than the median (50 years) were eligible. To foster discussion and avoid issues that participants were unable to relate to, it was necessary to balance between difference and resemblance in background. This was achieved by having participants from the same section but with different tasks. Requirement of sufficient experience (domain and task knowledge) was fulfilled by the age requirement. The three employees in the department that did not perform written communication with citizens were not included. Due to not wanting to introduce gender-dependent issues from IS or the social work domain, the two men were excluded. Differences in e-government use and attitude in each group should ensure discussion about digitization and e-communication. Focus groups should have 6-8 participants. Given the above mentioned constraints and the need to 'reserve' candidates for vacancies, it was possible to perform two focus groups. All participants had the same formal status. See participants' profiles in Table 1.

The two focus groups were performed 30 April and 2 May 2013 in the municipality meeting centre. This constituted a comfortable environment, whilst not the actual work place, which could distract attention. The focus group was planned from 8:15 to 9:45 and followed a strict plan. The researcher acted as moderator. An

observer was not appointed due to lack of resources even if this is sometimes recommended. Introduction, warming up and introducing the domain to the moderator was kept to a minimum because participants were comfortable with each other and the researcher and the researcher was familiar with the domain. The moderator presented the national e-government strategy including e-communication, the legal structures and the anticipated benefits. A short film show from another municipality with very positive attitudes to e-communication was shown to inspire the discussion. The focus group spent 30 minutes on discussing the general topic on the Danish e-government strategy and 30 minutes on the specific topic of e-communication. This was followed by a more practical part, where participants jointly solved a task about barriers. Different types of activities to maintain engagement and draw on multiple competences. The two discussions were guided by questions presented by the moderator and composed according to ethnographical guidelines (Johnston et al., 1995) in order to reduce moderator bias (e.g. questions were expressed in participants own language) and improve correspondence between responses and actual behavior (e.g. hypothetical responses and speculation was avoided by referring to participants experiences instead of attitudes and referring to meanings of different resource categories). The moderator tried to involve less engaged participants with directly targeted questions.

The sessions were recorded and transcribed (9.024 and 8.214 words). Statements were not only taken for face-value. Critical IS research acknowledges that employees are not always conscious about their conditions due to socialization (Cecez-Kecmanovic, 2005), which informed the coding process. Further, the author takes the philosophical stance that the real world is out there but every person has a personal perception of it. Coding was performed as open and axial coding using ATLAS.ti. Transcriptions, sub-categories and categories together with the core-category were presented to participants to confirm content validity. The findings were presented to managers. They commented that they did not find staff as worrying as described, but also, that staff may express different views when not exposed to managers. The two focus groups were performed according to the same content, guidelines, venue and time to provide reliability. To attain data saturation, it is recommended to perform 4-6 focus groups (Morgan, 1996). Data from this study only relies on two focus groups, but followed the indications from qualitative studies in another municipality. In both groups, participants expressed the view that the focus group had been like being with the colleagues in the canteen, indicating that participants were behaving naturally. The researcher was aware of the risk of bias influencing participants by his critical stance. As the focus group moderator, the researcher attempted to be objective and did only interrupt the discussion after the time limit or when participants went off-stray, e.g. when they had a wild debate on young peoples' use of social media. There are various limitations to the study. E-communication constitutes merely a mediating channel and not a 'service', hence the attributes may be more depended on the service than the channel or a combination and the findings may not be comparable with what is normally perceived as e-government. The findings may be limited to this specific combination of technology design, economic and legal means, and implementation strategy. Qualitative studies are not generalizable per se; this study may, however, be generally useful by its outputs.

The following Findings section connects statements with references to participants to ensure that the researcher is not blinded by own beliefs but lets the data inform the analysis.

Table 1 Participants in focus groups

FG	ID	DP Attitude ¹⁾	DP readiness ²⁾	Gender	Age	Education	Experience (years)	Team
1	P1	0	2	W	60-64	Social worker	3-4	1
	P2	0	2	W	60-64	Clerk	>10	2
	P3	0	5	W	55-59	Clerk	>10	4
	P4	0	6	W	55-59	Clerk	5-10	2
	P5	1	4	W	40-44	Clerk	3-4	3
	P6	1	4	W	55-59	Clerk	>10	1
	P7	1	4	W	50-54	Clerk	>10	2
2	P8	0	2	W	55-59	Clerk	>10	5
	P9	0	4	W	55-59	Clerk	>10	7
	P10	0	5	W	35-39	Social worker	3-4	4
	P11	1	4	W	55-59	Clerk	5-10	5
	P12	1	4	W	45-49	Clerk	>10	6
	P13	1	2	W	45-49	Clerk	>10	5
	P14	1	4	W	60-64	Clerk	>10	7

¹⁾ Self-reported attitude towards Digital Post (-1 = negative, 0 = neutral, 1 = positive)

²⁾ Self-reported use of EasyID/Digital Post as citizen, maturity = 0-6 from specific use questions

FINDINGS

According to the participants, e-communication is associated with different aspects related to the actors (citizen, staff, local and national government), technological/non-technological aspects and value (positive/negative), see overview in table 2. No positive statements were elicited regarding local and national government. During the focus groups, participants expressed some strong emotions: Deep worry for the citizens' well-being and insecurity of task handling was predominant. Insecurity of staff regarding layoffs was mentioned by one participant and alienation/apathy by one participant, none of these were questioned by the others.

Staff is very aware of the positive effects of e-communication and e-government as such for some citizens, e.g. that it is much easier, can be done more quickly, and that e-communications constitute a more reliable delivery channel, 'It is fantastic, that the citizen has these opportunities' (P5). This goes for both citizens and staff that recognize the advantages and find it 'much easier with e-communication' (P4). One participant (P7) expresses how satisfying it is, when a citizen discovers how easy on-line self-service is and the gratitude entailing. The participants share stories about their own digital readiness as citizens along with perceived positive tangible impact on the citizen service. As staff they express how e-communication is applied in a variety of work processes after own choice; there is no sign of general technology or e-government resistance. The negative effects will be further examined in following sub-sections.

It is seen by staff that e-communication has been enforced onto citizens (P2) and that it has been decided from 'a higher place' (P5, P6, P7). Further, staff reveals an overall perception of local and national government not living up to what might be expected of them, especially under the mandatory and captive use realm, see table 2 for attributes of the accountable parties (local and national government) on the enactment and technology issues of e-communication.

About citizens: Technology and availability barriers, public service is suppressed for weak citizens

Staff report technology as way too complex, e.g. recurring Java-updates, printer-handling, EasyID (to acquire and to operate), handling of e-communication attachments etc. It makes some citizens feel insecure, e.g. 'while there are many English words on the screen and this is not [easy] for those, who have never learned languages' (P13). Configuration of alerts (e-mail and text) is possible, but again, too complicated for some citizens to handle. Further, staff experiences issues with citizens that do not have computer access; some citizens' do not want a computer and some cannot afford it. One participant spoke about an elderly citizen crying in the telephone asking if the municipality can help provide a computer (P4). Staff described how a mouse device and

Table 2 Notable attributes of e-communication according to staff

	Citizen		Staff	
	Citizen service	Technology	Work life	Technology
Positive	<ul style="list-style-type: none"> Easier Quicker 	<ul style="list-style-type: none"> More reliable deliverance Independency of <ul style="list-style-type: none"> - time and place - public sector 	<ul style="list-style-type: none"> Easier Quicker More reliable deliverance 	<ul style="list-style-type: none"> System chooses delivery channel automatically
Negative	<ul style="list-style-type: none"> Troublesome Loss of rights Hits weak citizens 	<ul style="list-style-type: none"> Too complex Accessibility 	<ul style="list-style-type: none"> Increased workload The urge to offer service and help is suppressed 	<ul style="list-style-type: none"> Too complex Too many systems

	Local government		National government	
	Enactment	Technology	Enactment	Technology
Negative	<ul style="list-style-type: none"> Insufficient preparation <ul style="list-style-type: none"> - Procedures - Strategy - Citizen and staff information 	<ul style="list-style-type: none"> Insufficient interoperability <ul style="list-style-type: none"> - Systems integration - Automation 	<ul style="list-style-type: none"> Insufficient preparation <ul style="list-style-type: none"> - Joint government issues - Legal barriers - Citizen information 	<ul style="list-style-type: none"> Bad design Insufficient implementation <ul style="list-style-type: none"> - National shared systems

touch screen is difficult to use by the elderly people who seek assistance at Citizen Service. Citizens with no computer must access computers at Citizens Service Centers. But what about hospitalized citizens and institutionalized psychiatric or elderly citizens? Young people that use mobile devices and are not familiar with e-mails are also perceived as a group that may not access their Digital Post. Participants express that it is not right. 'It surely cannot be that people are forced to buy a computer (P2), the State or the municipality does not provide them with a computer [indignantly] (P13).'

E-communication has been more troublesome for some citizens. The public sector sends digital letters to citizens with attached forms that citizens must print, sign and return to be eligible for a given welfare service (a loan, livelihood, an assistive tool etc.). Citizens need to have a working printer or must use the public library where you need to pay. Participants judge it as unfair that the public sector sends digitally to citizens but citizens cannot answer back digitally (P9). Citizens that do not have access to a computer at home or alerts, need to access a computer elsewhere. This may be inconvenient for sick or institutionalized citizens. The main worry, however, is that citizens are not aware of these e-communication from public institutions and that this may have severe consequences; an unnoticed form with a deadline may result in lost welfare benefits. 'What worries me is that people are not aware [of Digital Post] (confirmation from the others). One elderly lady was not aware that she had been registered [...] she didn't manage to return the housing aid application in time so she lost one month's pay and the deposit loan option (P9). Other examples may be citizens that do not get the information they are entitled to following a legal decision (F14), for instance about the complaint process. Staff describes citizens, especially elderly men, that visit the Citizen Service to be assisted with handling the computer - but when they realize that they must operate the computer themselves and that staff must only facilitate, they leave in anger and despair. Participants worry that a group of citizens will never apply for the welfare services they are entitled to, purely because it must be done digitally (e.g. P14). From both focus groups it was very clear that staff experience many incidents, where people do not notice their Digital Post. Due to digital privacy issues, participants perceive that they are not allowed to help citizens as in 'the old days'. At the same time, the digital format is more difficult to share with others that could help, 'the neighbor cannot empty your mailbox' (P5). Citizens express that there is no service left, 'in two years, we do not have 'Citizen Service', only 'Citizen INFO' [laughter]' (P11). Citizens' ability to cope with e-communication depends on life situation:

It depends, where you are in your life and the situations, you're put into. Are you enrolling your child in daycare or are you sick and in a crisis? For me, I'm sick right, seriously ill and I damn well cannot manage to do this or this or this or, I have lost my job, I need to apply for unemployment, it's terrible for me, I have lost my job - it depends on how much emotional surplus you have to grasp what you have to do (P7)

Even though they agree that local and national government have not fulfilled their obligations to inform citizens (P3, P5, P6, P7, P8) it is also stated that citizens do not read the information and that citizens will be affected before they learn: 'this will only be clear to them [citizens], when they are affected, when they lose money (confirmation from others) (P5).

About staff: Technical issues, increased workload and reduced work satisfaction

Participants agree that there are too many systems and too much to remember. First, staff needs to know the e-government systems from the citizen approach to be able to assist the citizens. Second, staff operates 15-20 systems to perform their daily work and these systems should be integrated with the Digital Post system. A typical situation is one system provides an attachment, the Digital Post system provides the letter and the digital channel and the two parts need to be archived in the case handling system. Participants have different experiences with different systems, some work for some and some do not. Staff must manually ensure consistency, which inevitably leads to payment errors (P7), which must be corrected. Systems that are not integrated must be compensated for by check lists or memory; interruptions by telephone or visits are described by participants as very stressful. Staff perceive that it's their own responsibility to learn new systems, and the vast majority of the participants express that they do not have time to learn and experiment with new systems (e.g. Digital Post) (P5, P4, P8, P9, P11). 'It's hard to follow all the new things; I just try to hang on' (P10). Participants express great uncertainty and confusion about the Digital Post system concept and how it is managed vis-à-vis other systems. One participant comments that 'if we cannot understand it, how can we explain it to the citizens?' (P5). Participants discussed many troublesome work processes due to interoperability issues; one participant comments that 'one must do more than before to make it work, it is more time consuming, this certainly wasn't the objective (others: no!)' (P13), she describes how citizens are beginning to use Digital Post to write to the municipality, but often it is extra work because they write and ask if we got the electronic message'. Digital/analogue shifts during work processes comprises another major extra workload mainly due to other public institutions demanding signature, original documents etc.

Before the digital era, staff and citizens shared information in a more flexible way, staff could even fill out forms (P2). In the digital era, privacy issues are more salient and practices have changed, 'I have to say to citizens that

you HAVE to do this [digitally], but I cannot manage, won't you help me? No, I cannot' (P4). Participants especially worry about weak citizens. Participants talk strongly about a 'service' or 'caring' gene, but also agree that they assist citizens too much. Participants describe how they omit e-communication or the rules to ensure that citizens do not lose welfare benefits (P5, P11). Many of the participants feel frustrated.

What hits me the most is my 'caring gene', I think of all those poor citizens that cannot manage [the digital domain] (P4), but then you care for them by helping them into the new world (P3), yes, I can explain, but I cannot buy them a computer or bring them to the municipality, I can understand their frustration (P4), but it is our duty to tell them that THIS is the way it is (P5).

One participant describes how this new regime impacts her attitude.

I can be struck by apathy; all the rejections [on welfare benefits applications] that I send. Before, I had some feelings into it – it's a pity, he's not too smart – but now, there are these rules - bang! - Rejection! To protect oneself, you have to say 'that's just the way, it is'' (P5)

About local and national government: Insufficiently designed, prepared and implemented

It is very clear that participants find a lack of 'balance' in the relation between public sector and the citizen. Participants find that e-communication should have been better prepared so all public institutions should use e-communication (e.g. police and priests), legal barriers should have been cleared (e.g. digital signatures) and citizens should be able to respond on digital forms instead of having to print, sign and return analogue forms. The system was badly designed (e.g. the dependency on third party software as browsers and Java introduced severe barriers to citizens) and information of citizens on the potential severe consequences of e-communication. Some participants find that it has been carried out too quickly. Participants do not express the same concern for the lack of interoperability, procedures, strategies and adjusted work processes that affect their own work life quality.

IMPLICATIONS

E-government is not only one thing; it can be good or bad. The former section considered what civil servants perceive as negative attributes. E-government and e-communication can be troublesome and may imply that citizens do not get the welfare services that they are entitled to. Besides, the weaker citizens are heavily affected by the digital enforcement due to the combination of high dependency on public services and low accessibility. Staff perceives an increased workload combined with a reduced ability to provide service and help citizens, which together constitute a reduced work life quality. Generally, staff sees the technology part as far too complex, both for citizens and for staff. This section will elaborate on the critical implications for practice and research.

Weaker citizens get hit by e-communication

It was apparent that participants worried about the e-government impact on the sick, the elderly, the unemployed, i.e. on what may be called the weaker citizens in the sense that they have fewer resources to cope with – or fight against – public sector bureaucracy and demands. Staff even expresses it as not fair and showed clear indignation. To be able to fulfill the requirements that follow from collecting welfare benefits, the citizen is obliged to engage in a recurring application-and-confirmation processes, based on forms and written communication. The mandatory e-communication has made this even more rigid because failure to reply to e-communication has legal (and economic) consequences. Further, citizens, also need to spend money on a computer, printer and internet; and to master skills to operate and maintain hardware and software, including recurring updates. It is not at all trivial for the segment of weaker citizens that may never have had a computer or experience fatigue due to a life crisis. Municipal staff finds that many elderly citizens cannot operate a mouse, let alone panic when 'Java needs to be updated'. Whilst personalized e-services have been shown to enhance user satisfaction (Tan et al., 2013), the Danish e-communication initiative is a one-size-fits-all design, which in this case clearly is shown not to comply with the goal from Holgersson et al. (2010) that e-services should be usable. Moreover, it obviously doesn't comply with citizen responsiveness or democratic development goal. One may also question whether efficacy is fulfilled if a major group of citizens does not demand e-communication. More importantly, this study indicates that requirements are needed to protect civil rights. E-services should not impede citizens in executing their citizens' rights.

Citizens that do not want a computer or cannot afford one need to travel across the municipality to do their required business with the public sector in Citizen Service Centers or libraries where they struggle with less help from staff because of privacy reasons. Staff describes how the dependency on public livelihood combined with the perceived barriers to the communication channel that ensures this livelihood makes some citizens angry, unsecure and nervous, they predict that some citizens will not apply for the benefits, which they are entitled to

and some citizens will directly lose benefits. In Denmark, the citizens that receive benefits from sickness, pension, unemployment etc. constitute one third of population.

E-government, it has been argued, reinforces existent power structures (e.g. Cordella and Bonina, 2012), so this is not new. Basically, it is a question of, what kind of society, we want. Ironically, the enactment of this e-government initiative may, however, with its negative implications on weaker citizens, especially the elderly (who attract huge political focus), provoke certain political parties – the most right wing party with one fourth of the voters, had announced that they want e-communication to be voluntary for the elderly. No political party had ever voted against one of the four Danish e-government strategies since 2001, but this may change the Danish e-government momentum, slowing down the positive implications of e-government initiatives.

E-communication may alter public sector ethos

Staff reveals in a matter-of-factly way the various barriers, they experience in their daily work with e-communication, but they do not complain, even though there was a comment about fear of lay-offs. This is natural, since cost reductions are the stated goal. One participant was laid-off five months after the focus group due to cuts as a result of reduced state funding from e-communication. The barriers relating to insufficient design, preparation and implementation are well known from IS and e-government. The combination, however, of increased workload and reduced work life quality may be important. This study does not give grounds to elaborate on the overall efficiency, however, staff express clearly with various examples that the goals of efficiency have not been met. The Ministry of Finance is well aware of the internal and external barriers and has chosen a watch and wait implementation strategy. Staff is very conscious about this; they find that it has become mandatory too early. For instance, they criticize that the fact that citizens cannot answer digitally and that citizens need to buy computer and printer. It is clear, that they do not support Digital Post as it is enacted, though, it is a silent protest. They comply and do what is expected of them, but there is a clear feeling of imbalance. It is not fair that public sector saves postal costs, while citizens get more trouble and eventually lose welfare benefits.

Moreover, they feel frustrated that they are not allowed to provide the usual service when they find that citizens cannot manage. This has a direct impact on their work life quality, because what ‘drives them to work every morning’, is to ensure that especially weak citizens receive the necessary assistance to be able to respond to public sector demands. Public sector ethos is under pressure from e-communication since it touches upon civil servants’ motivation for doing ‘something good’, which might create apathy that impacts the civil servant in the direction of merely managing the job instead of pursuing an extended public good. E-communication as it is enacted has revealed a fragmented public sector where one part decides to use e-communication and other parts decide not (e.g. police, courts, church). This might affect civil servants’ beliefs in the wider context of public sector. Lastly, the loyalty both to local but especially to central government is clearly at stake. Pratchett and Wingfield (1996) proved how NPM values in the 1990’s altered the public sector ethos. E-government may follow the same trail.

New e-government research approaches may be called for

E-government research has been preoccupied by the great potential and possible evolvement of e-government to ensure, at the same time, efficiency and citizen empowerment (Coursey and Norris, 2008). The scholarly focus has been on how to assist government in removing barriers, e.g. by investigating, what motivates citizens to adopt e-government from a technology deterministic viewpoint (Heeks and Bailur, 2007). Further, studies of car registration, tax filing or public website information provide little insight in the potential negative impacts of e-government. Andersen and Henriksen (2006) promote a model, where citizens and not governments control personal data, but not from an empirical background. Cordella and Bonina (2012) state that e-government may introduce political and administrative consequences that should not be overlooked. Empirically based studies, however, of negative impacts from e-government have not yet been seen, which may be connected to the likewise limited application of mandatory e-government. As this study shows, mandatory e-government may impact the lives of citizens and civil servants and even affect the public sector ethos. The call from Heeks and Bailur (2007) to engage in qualitative, empirical and critical studies still holds. There is a need to further establish qualitative research methods to engage weaker citizens, along with civil servants. Promising studies have been made in engaging citizens in e-government research, e.g. using focus groups (Axelsson and Melin, 2007) and finding suitable participatory approaches (Holgersson et al., 2010).

Scholars have been critical of how governments fail to realize the potential of e-government and have offered a variety of evaluation frameworks (e.g. Luna-Reyes et al., 2012) or stakeholder perspectives (e.g. Flak and Rose, 2005). The underlying assumptions for offering such models, is that there is a lack of knowledge, and governments will apply this knowledge if it was present. The models, however, are of limited value if governments are committed to pursue only efficiency goals and neglect the citizen or staff perspective. During

this study, no participant voiced against e-government or against mandatory e-government; no participant cited citizens that demanded free e-government (the state should supply hardware, software and internet), let alone their civil right to be served *without* e-government. Or at least, demanded that e-government, both from a civil servants' and citizens' perspective was easily operable. Critical e-government research has a role to play in offering alternative and respectful e-government. By providing viable alternatives in design or implementation, e.g. that it is possible to implement over a longer period, citizens and civil servants may articulate their voice. Further, research should offer and promote empowering techniques and methods such as to promote critical e-government inputs. In the 1970's, researchers and trade unions formed alliances to stand up against ruthless businesses. Researchers were then driven by the beliefs that technology gains and work life quality could and should be pursued simultaneously.

CONCLUSION

The Danish e-government strategy produces significant e-government growth statistics. Yet, there is little knowledge about how the current mandatory e-government regime impacts citizens and civil servants in the short and long terms. This paper reports from a qualitative, exploratory and critical study of the enactment of a Danish e-government initiative, mandatory e-communication from public sector to citizens. As it is enacted by the Danish government, is shown to have both positive and negative effects on staff and citizens. As expected, e-communication, in some situations and for some citizens, is both quicker and easier for citizens and staff. However, as may not be expected – or reflected on by e-government researchers – civil servants find that e-communication may have negative impact on some citizens. It may be very troublesome for especially weaker citizens and entails that some citizens do not apply for the benefits, they are entitled to and some citizens lose their benefits. Staff report citizens to be angry, insecure and emotional, especially when staff is not allowed to help manage the computer and the e-services. Furthermore, staff describes how their workload has increased because of many unforeseen barriers, bad design and insufficient preparation and implementation. Staff shows great worry for the weaker citizens and frustration because they cannot provide the good citizen service that they are used to; apathy and declining motivation may impact the virtues of public sector ethos. This paper calls for more empirical based critical e-government research with a focus on mandatory e-government and impact on the weaker actors of e-government (clerical staff and weaker citizens).

So, what is the path forward? Should governments that make e-government mandatory be criticized? If mandatory e-government proves to ensure a reduction in public sector costs, more governments will follow, regardless of scholarly criticism. Researchers should not be blinded by the coercive forces, but rather focus on the way it is enacted – not only by central government – but by the multitude of various decisions and choices throughout the various public institutions and private sector actors that design, implement and use e-government initiatives. Disclosure of how e-government is enacted and the consequences for people may constitute the background on which the taken-for-granted belief that more public IT is better will be questioned.

When it is acknowledged that e-government may violate citizens' rights and have a negative impact on life quality for both citizens and civil servants, it will be necessary to monitor these and provide alternative e-government enactment models for public discussion of what kind of society, we want. In this endeavor, citizens and staff constitute valuable informants. E-government researchers have the skills to provide alternatives to those in power, elicit the necessary empirical evidence, and suggest techniques and methods that enable participatory activities and empowerment – we might be the only allies that citizens and staff have got. It may be possible to perform even mandatory e-government with the twofold goal of increasing public sector efficiency and improving conditions for citizens and staff – at least ensuring that they do not decline.

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Paper 6

Berger, Jesper B., Hertzum, Morten, & Schreiber, Trine. (2014). Does local government staff perceive digital communication with citizens as improved service? *Submitted for publication.*

Does Local Government Staff Perceive Digital Communication with Citizens as Improved Service?

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Abstract

Digital communication between government and citizens is pivotal to e-government. The e-government initiative Digital Post aims to digitize all communication between government and citizens for most Danish citizens. We survey local government staff about how Digital Post affects the service delivered to citizens. As much as 82% of the 448 respondents considered digital communication with citizens using Digital Post a good idea, yet 47% reported concrete incidents in which they perceived a decrease in service with Digital Post. The respondents employed six content categories in their incident descriptions. We discuss e-government adoption in the light of these categories.

Keywords: E-government, digital communication, online services, technology adoption, local government

1 Introduction

E-government encompasses “the use of information and communication technologies to enable citizens, politicians, government agencies, and other organizations to work with each other and to carry out activities that support civic life” (Robertson & Vatrapu, 2010, p. 319). However, even in countries with a high level of e-government readiness digital communication between citizens and government agencies is not yet established practice (Andersen, Medaglia, Vatrapu, Henriksen, & Gauld, 2011). Rather, most of the communication consists of physical letters, phone calls, and face-to-face meetings. A transition from these means of communication to digital communication is necessary to attain the economic and efficiency benefits expected from e-government. Yet, the perceived costs of imposing such a transition are debated and include that it degrades government service for less digitally literate citizens (Bélanger & Carter, 2009). A service degradation may be experienced by citizens and by the government staff who, particularly in local government, are in direct contact with the citizens who are affected – positively or negatively – by the transition.

This study surveys local government staff’s perception of the Danish e-government initiative Digital Post, especially of whether it is good service to citizens. We investigate Digital Post because it is pivotal to the national e-government strategy regarding digital communication between government and citizens and because only 27% of Danish citizens had become users of Digital Post a year before all citizens were required to be users (Berger & Hertzum, 2014). The modest level of adoption among citizens makes it interesting to know how the system is perceived by the staff tasked with using it and, thereby, knowledgeable about its concrete effect on the service delivered by local government to citizens. Along with the citizens, the staff is the second large user group of Digital Post, and they have an additional role as champions of the system toward the citizens. In spite of the importance of

government-side users to e-government success, Nurdin, Stockdale, and Scheepers (2011) find that they are underrepresented in e-government research, which predominantly focuses on the citizens. The aim of the present study is to assess local government staff's perception of Digital Post, map out the sources underlying this perception, and complement previous research with a study of the government-side users of e-government.

Digital Post is a system for authenticating, encrypting, and sending digital letters between government institutions and citizens without the need for email addresses (which may change over time). Staff accesses Digital Post through an output manager. If a citizen has adopted Digital Post, the output manager sends a digital letter to the citizen using Digital Post; otherwise, the output manager automatically sends a physical letter. Citizens access Digital Post through a national public portal, *borger.dk*, using their national electronic id along with their social security number. Digital Post is free of charge to citizens. The major incentive for local governments to adopt Digital Post is the ensuing reduction in postal costs when digital letters replace physical letters. For citizens, the major incentives to adopt Digital Post are the gradual transition in society toward digital means of communication and the easier management of their correspondence with their municipality and other public institutions when all the correspondence is in one place and remains accessible until deleted by the citizen. We conducted our survey four years after local governments gradually started to use Digital Post and half a year before its use became mandatory for citizens.

2 Related work

Governments are going online and increasingly make use of information technology in their internal processes and for communicating with citizens (Norris & Reddick, 2013; Robertson & Vatrapu, 2010). In the following, we briefly review related work on e-government adoption, on factors influencing the adoption of e-government services, and on how to assess service.

2.1 E-government adoption

The evolution of e-government can be perceived as passing through stages of increasing sophistication. Layne and Lee (2001) propose four such stages: *catalogue*, involving online presence and downloadable forms; *transaction*, involving online services and forms; *vertical integration*, involving local systems that are linked to higher-level systems in similar domains; and *horizontal integration*, involving the integration of systems across different domains. The increasing sophistication of the stages implies that earlier stages tend to be prerequisites for later stages. Digital Post is at the transaction stage. Multiple studies find that the advancement of local governments to the transaction and integration stages is progressing slowly (Andersen et al., 2011; Coursey & Norris, 2008; Norris & Reddick, 2013). In explaining this slowness a number of barriers to e-government adoption have been identified. For example, Nurdin et al. (2011) report, on the basis of a literature review, four categories of barrier: *involvement*, including lack of participation and lack of commitment; *adaptability*, including inadequate change management and lack of transparency; *mission*, including unclear goals and unclear strategies; and *bureaucracy*, including no supporting regulations and unclear organization structure. In addition, Irani, Elliman, and Jackson (2007) report from workshops with e-government practitioners that they often saw technology more as the creator than the solution of problems due to poor fit between technology and work processes. The e-government practitioners also frequently questioned the evidence of citizens' demand for e-government.

In spite of the principal role of government staff in the delivery of e-government services, this group has received less attention in studies of e-government adoption than citizens and government as an institution (Rana, Dwivedi, & Williams, 2013). Contrary to overall intentions, some e-government services have been found to increase staff workload because the staff needs to spend more time documenting their work and following rigidly designed workflows, thereby leading to disrupted work practices and growing resistance among staff (Wastell, White, Broadhurst, Hall, & Peckover, 2009).

Similarly, (<reference temporarily removed to preserve anonymity during reviewing>) found that Digital Post was not consistently adopted by municipal staff. These examples show that government staff may face gaps between their everyday experience of e-government services and the rationales that drive e-government at the institutional level. Roman (2013, p. 227) elaborates these gaps by emphasizing that “public administrators often develop personal and emotional ties with the citizens that they serve”. These ties and the practical knowledge that follows from serving citizens provide the staff with an impetus to compensate for rigid rules associated with e-government and with the basis necessary to question such rules. In most cases staff lacks the power to change the rules and must, therefore, work within or around them, probably experiencing moral tensions (Roman, 2013; Wastell et al., 2009). One source of such tensions is that equality of treatment may suffer as a result of e-government because some citizens cannot afford or master new technology (Bannister & Connolly, 2014).

2.2 Factors influencing individual adoption of e-government services

Whereas e-government research has often uncritically assumed that e-government is a good thing for government at the institutional level (Heeks & Bailur, 2007), the factors influencing e-government adoption at the personal level has been subject to more scrutiny. Multiple studies have investigated individuals’ adoption of e-government on the basis of factors drawn from models of technology acceptance (Venkatesh, Morris, Davis, & Davis, 2003), diffusion of innovations (Rogers, 2003), service quality (Parasuraman, Zeithaml, & Malhotra, 2005), and web trust (McKnight, Choudhury, & Kacmar, 2002). In a survey of 873 US local public managers, Shin (2012) found that their use of e-government was influenced by their perception of the technology as well as by their commitment to public service. That is, consistent with technology acceptance models the use of e-government was higher for managers who perceived the e-government technology as useful to their work and easy to use. At the same time, e-government use was higher for managers with a high commitment to provide public service (the seven items used to gauge this commitment included “I consider public service my civic duty” and “Meaningful public service is very important to me”). Similarly, Sun, Ju, and Chen (2006) found that user satisfaction with a document-transfer system in the Taiwan public sector was positively related to users’ perception of system quality, information quality, and the quality of the service provided by internal IT staff. This study, based on a survey of 631 managers and users of the document-transfer system, is particularly interesting because the system resembles Digital Post.

Because government staff’s perception and adoption of e-government is influenced by whether it provides a quality service to citizens, it becomes relevant to this paper how citizens perceive e-government. For example, Carter and Bélanger (2005) surveyed 105 US citizens and found that their intention to use e-government was significantly predicted by compatibility, perceived ease of use, and perceived trustworthiness. Compatibility – the degree to which e-government was seen to be compatible with the citizen’s existing values, beliefs, experiences, and needs – was by far the strongest predictor. Surprisingly, relative advantage, a prominent factor in the diffusion-of-innovations theory, did not significantly predict the citizens’ intention to use e-government. Shareef, Kumar, Kumar, and Dwivedi (2011) surveyed 239 Canadian citizens and found that their adoption of e-government depended on the sophistication of the e-government service. At a level of sophistication resembling Layne and Lee’s (2001) first stage, catalogue, adoption was significantly affected by perceived awareness and ability to use. At a level of sophistication resembling Layne and Lee’s second stage, transaction, adoption was, in addition, affected by perceived information quality, trust, and image. These results show that with increasing e-government sophistication, citizens’ adoption became affected by a broader range of factors.

2.3 Assessing service

A service consists of a series of incidents during which the service provider and the service recipient interact, interspersed with periods without interaction (Parasuraman, Zeithaml, & Berry, 1988). Following the recognition that services extend over time, they are often seen as relationships. From

an assessment point of view, the relationship and the incidents constitute two distinct levels (Odekerken-Schröder, van Birgelen, Lemmink, de Ruyter, & Wetzels, 2000). Relationship-level assessments target the service as a unit. This level lends itself to surveys asking respondents to rate their attitude toward a service, using questions such as 'Is Digital Post an easy-to-use service?' Surveys are fairly easy to administer and analyze but attitude ratings have been criticized for relying on preselected rating scales, which may miss important aspects of the respondent's perception of the service (Krosnick, 1999), for forcing respondents to aggregate their service incidents into an overall attitude, which they may experience as unnatural and difficult (Stauss & Weinlich, 1997), and for encouraging a tendency among respondents to agree to any assertion made in a question regardless of its content (Schaeffer & Presser, 2003).

Incident-level assessments target the individual incidents of which the service relationship consists. Inspired by Flanagan (1954), the incident level of a service is often assessed by collecting descriptions of critical incidents and then conducting a content analysis to identify patterns in the data (Gremler, 2004). While the critical incident technique avoids the limitations of attitude ratings, it is time-consuming for respondents to describe critical incidents in concrete detail and for researchers to analyze the data. Consequently, "very few studies exceed 300 incidents for analysis" (Urquhart et al., 2003, p. 65). In addition, the critical incident technique has been criticized for disregarding the temporal aspect of services by restricting assessments to a usually small subset of the incidents in a service relationship (Stauss & Weinlich, 1997) and for being susceptible to bias in respondents' recall and description of incidents because the method emphasizes a free account of the respondent's perspective (Gremler, 2004).

While the incidents experienced by a person over time result in her perception of the service relationship, it is not clear how to merge assessments at the two levels. Edvardsson and Strandvik (2000) investigated whether critical incidents were critical to the relationship and found that in spite of many cognitively negative incidents the respondents rated the relationship highly. Though the incidents did not seem to change the respondents' attitude to the service, they had told 4-5 other persons about the incidents, thereby suggesting that the incidents could have influenced these persons' perception of the service. Odekerken-Schröder et al. (2000) found that negative incidents had more influence on respondents' perception of a service relationship than positive incidents. This finding is consistent with the general finding in psychology that bad is stronger than good (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Some authors equate the distinction between the two levels with a distinction between service quality and satisfaction (Parasuraman et al., 1988). They argue that quality is a global judgment and, thereby, refers to the relationship level, whereas satisfaction relates to specific incidents. From this perspective, incident-level and relationship-level assessments should be considered complementary measurements, not alternatives. Attribute ratings provide an aggregate index of service quality (Stauss & Weinlich, 1997). Incident descriptions reveal the underlying sources of satisfaction and dissatisfaction (Bitner, Booms, & Tetreault, 1990).

3 Method

To investigate local government staff's perception of Digital Post we conducted a survey addressing the relationship level as well as the incident level.

3.1 Survey instrument

The survey instrument consisted of 29 questions, divided onto ten questions about the respondent's attitude toward Digital Post, three questions asking the respondent to describe a concrete incident with Digital Post, seven questions about the respondent's demographics and personal use of Digital Post, and nine questions not used in this analysis.

The ten attitude questions consisted of two questions about the respondent's overall attitude toward Digital Post and eight questions about specific attitude elements. The eight specific questions

were adopted from the technology-acceptance literature (Venkatesh et al., 2003) and comprised two questions for each of performance expectancy, effort expectancy, social influence, and facilitating conditions. We asked the ten attitude questions to tap respondents' perception of Digital Post at the relationship level. Respondents answered the ten questions on five-point rating scales that ranged from 'agree' to 'disagree'.

The main question among the three incident questions asked the respondent to describe a concrete incident with Digital Post. The wording of this question was (translated from Danish):

Describe a concrete situation in which you have experienced that Digital Post changes the service delivered to the citizen. It may be a situation where your use of Digital Post has improved the service or decreased the service or a situation where you have refrained from sending Digital Post because you believed it would be bad service to the citizen.

We chose to ask respondents to describe a concrete incident because we could not know whether the attitude questions unintentionally left out issues important to the respondents, because we envisaged that the incident descriptions would be rich in diagnostic detail, and because the respondents' motivation to complete the survey might benefit from the possibility to recount a concrete incident from their experience with Digital Post. The open, incident-description question was followed by two closed questions. The first of these questions asked respondents to indicate whether "The change in service to the citizen in the situation described" had (a) improved with the use of Digital Post, (b) decreased with the use of Digital Post, or (c) the respondent had refrained from using Digital Post to avoid a decrease in the service delivered to the citizen. We also asked respondents how often the described incident occurred, providing five response options from 'very often' to 'very rarely'.

Finally, we asked respondents four questions about their weekly use of Digital Post and three demographic questions about their age, gender, and place of work. The weekly-use questions supplemented the attitude and incident questions with self-assessed quantifications of the amount of system use, indicated on a five-point scale with the response options '0', '1-5', '5-10', '10-50', and '50+'. We used the demographic questions to analyze our data for response bias.

3.2 Procedure

The survey questions were formulated on the basis of two of the authors' previous research into the adoption of Digital Post (<reference temporarily removed to preserve anonymity during reviewing>). We pilot tested the survey instrument on 100 people from the target population and, as a result, clarified the wording of a few questions. To inspire more elaborate descriptions we, in particular, revised the wording of the question asking respondents to describe a concrete incident with Digital Post.

The survey was conducted in April-May 2014 by emailing an invitation to participate to the members of HK who were registered to receive newsletters and the like. HK is the national union of commercial and clerical employees in Denmark. Except for distributing the invitation on our behalf, HK had no role in the survey. We had HK distribute the invitation to participate in the survey because union membership is common in Denmark, because HK had approximately 72% of the clerical staff in local government as members, and because it was the clerical staff that sent letters to citizens and, thereby, considered whether Digital Post was a more or less appropriate option than a physical letter. The invitation was sent to 16384 persons, only some of which were within our target group. Therefore, the invitation specified that it was intended for clerical staff tasked with sending letters from local-government institutions to citizens and with receiving letters from citizens. The invitation also introduced the survey and contained a link to the survey itself.

Participation in the survey was fully anonymous, except if respondents were willing to be contacted for further details and therefore volunteered their contact details. No reminders were sent out. Our main reason for choosing against reminders was that we felt a reminder would increase the risk of

some persons responding multiple times, something we would be unable to detect because the respondents were anonymous. We closed the survey after it had been running for 25 days.

3.3 Data analysis

We received 632 responses. Prior to our analysis we removed 100 responses with no, incomplete, or incomprehensible incident descriptions, 34 responses with incident descriptions that were not about Digital Post, 24 responses with incident descriptions about the use of Digital Post in communicating with companies rather than citizens, 19 responses from respondents who did not themselves communicate with citizens, and 7 other responses. As a result, our analysis comprised 448 responses.

The analysis of the incident descriptions consisted of identifying the categories of content in the incidents. The first and third author analyzed the incidents in an iterative process of coding incidents with already identified content categories and creating new categories to capture content not previously encountered. In this process, categories emerged and evolved through discussions among the two authors and through the coding of still more incidents. At the end of this analysis, all incidents were coded with one or more of six content categories, see Table 1. The incidents were coded with minimal interpretation by relying on the wording of the incident descriptions.

In preparation for a crosscheck of the analysis, the second author independently coded a training set of 93 randomly selected incident descriptions by assigning them to the six content categories. The authors then discussed the disagreements in their coding of the training set to arrive at a shared understanding of the categories. Thereafter, the second author independently coded the remaining 355 incidents. Cohen’s (1960) kappa of the agreement between the original coding of the 355 incidents and the crosscheck was .64, which is above the recommended minimum of .60 (Lazar, Feng, & Hochheiser, 2010). With this indication that the coding of the incidents was fairly robust we describe the six content categories in Section 4.4.

Table 1. The six content categories

Category	Description
Changes in service	Changes – positive and negative – in the service toward the citizen after the introduction of Digital Post
Attributes of the citizen	The citizen’s prerequisites and readiness for using Digital Post, including skills, motivation, and access to technology
Changes related to staff	Changes – positive and negative – in the local-government staff’s perception of their work situation as a consequence of Digital Post
Institution-level effects	Effects – positive and negative – for the local-government institution as such of introducing Digital Post
Staff-related operations	Operations that are facilitated or hampered by the relation between Digital Post and the local-government staff
Citizen-related operations	Operations that are facilitated or hampered by the relation between Digital Post and the citizen

3.4 Respondents

To assess the representativeness of the 448 respondents we compared their age, gender, and geographic distribution with those of the full population of local government staff, see Table 2. The data about the full population were obtained from the Ministry of Economic Affairs and the Interior. With respect to age and gender, the respondents were distributed similarly to the full population. For geographic distribution, the Capital Region of Denmark was overrepresented and the North

Denmark Region underrepresented in our data; the percentages of respondents from the three other regions were similar to the full population. On this basis, we consider the respondents a reasonably representative sample of the population of local government staff.

Table 2. Demographics of survey respondents compared with the population of local government staff

Category	Survey respondents ^a		Population of local government staff ^b
	<i>N</i>	%	%
Age			
Under 20	0	0	1
20-29	18	4	7
30-39	74	17	18
40-49	134	31	30
50-59	172	39	33
60-69	40	9	11
70 and above	0	0	0
Gender			
Female	386	86	84
Male	61	14	16
Geographic region			
Capital Region of Denmark	87	22	11
Region Zealand	91	23	21
Region of Southern Denmark	87	22	21
Central Denmark Region	107	27	31
North Denmark Region	29	7	15

Notes. ^a Age was unspecified by 10 respondents, gender by 1 respondent, and region by 47 respondents. ^b The data about the population of local government staff were obtained from the Ministry of Economic Affairs and the Interior (for year 2013).

4 Results

We analyzed the responses to our survey from 448 clerical employees in Danish local-government institutions. The analysis addresses the respondents' perception of Digital Post at the relationship level as well as the incident level.

4.1 Frequency of use of Digital Post

The respondents reported using Digital Post to send digital letters to citizens at least as often as they sent physical letters to citizens, see Table 3. The median frequency of use was about once a day for sending digital letters from the respondents' email client (Outlook) and about twice a day for sending digital letters from their text processing system via the output manager. The output manager could also be used without supplying the citizen's social security number but this practice meant that the letter could not be sent digitally, effectively converting Digital Post into an alternative way of sending physical letters. The median frequency of this practice was non-use. We found a significant correlation between frequency of use and respondent age for only one type of use of Digital Post. Younger respondents made slightly more use of Digital Post via the output manager by supplying the citizen's social security number.

Table 3. Weekly use of Digital Post

How many times a week do you...	Frequency ^a	Correlation with age ^b
	Median	ρ
Use the Digital Post button in Outlook?	1-5	.07
Use [the output manager] with a social security number?	5-10	-.13 **
Use [the output manager] without a social security number?	0	.06
Send a physical letter?	1-5	-.02

Notes. ^a The response options were 0, 1-5, 5-10, 10-50, and 50+. ^b Non-parametric Spearman rho correlation. ** $p < .01$.

4.2 Perception of Digital Post

At the relationship level, more than 82% of the respondents agreed, fully or partially, that it was a good idea that local government wrote to citizens using Digital Post and that citizens could write to government institutions using Digital Post, see Figure 1. The median response was partial agreement for local government writing digitally to citizens and agreement for citizens writing digitally to local government. For both questions there was a significant, but weak, correlation with respondent age in that younger respondents agreed slightly more.

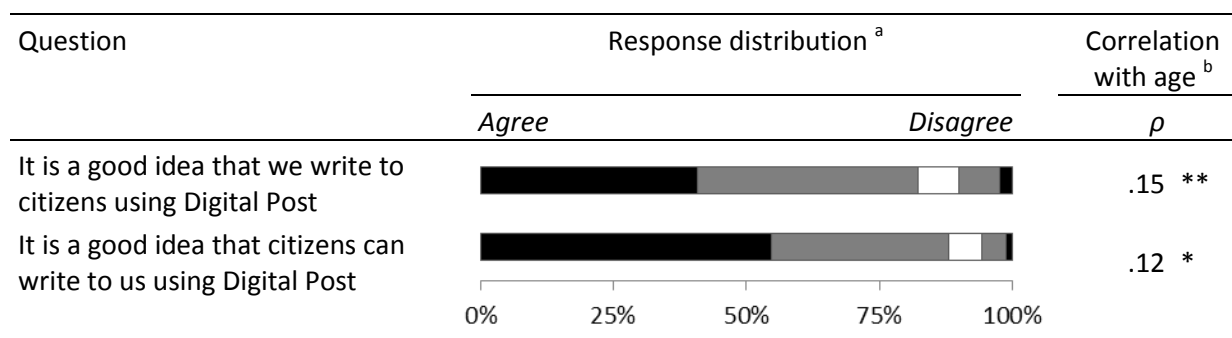


Figure 1. Overall attitude toward Digital Post

Notes. ^a The response options were agree (left black), partially agree (left grey), neutral (white), partially disagree (right grey), and disagree (right black). ^b Non-parametric Spearman rho correlation. * $p < .05$, ** $p < .01$.

At the incident level, only 53% of the respondents described situations of improved service, see Table 4. Thus, there was an almost even split between positive situations and the two kinds of negative situations. As much as 21% of the respondents described situations in which they had refrained from using Digital Post to avoid providing a degraded service to a citizen. We consider the number of incidents in which respondents refrained from using Digital Post noteworthy because these incidents indicated a level of dissatisfaction sufficient to influence the respondents' behavior and because local government was under considerable political pressure to use Digital Post. Also, the respondents' median rating of the frequency at which the described situations occurred was closer to 'very often' than 'very rarely' for positive as well as negative incidents, suggesting that the negative incidents contain lessons important to achieving widespread adoption of Digital Post.

Table 4. Concrete incidents with Digital Post

Perception of incident	Frequency		How often does this situation occur? ^a
	<i>N</i>	%	<i>Median</i>
Improved service with Digital Post	239	53	2
Decreased service with Digital Post	115	26	2
Refrained from using Digital Post	94	21	2

Note. ^a Respondents rated this question on a five-point scale with the end points ‘very often’ (1) and ‘very rarely’ (5).

4.3 Overall attitude versus concrete incidents

The difference between the respondents’ positive perception of Digital Post at the relationship level and their more mixed perception at the incident level calls for analyzing the association between the two levels. Table 5 shows a breakdown of one of the overall-attitude questions and one of the frequency-of-use questions onto the three kinds of incident. We tested the association using Goodman and Kruskal tau, which indicates how much errors in the prediction of one variable are reduced given information about another variable (Costner, 1965). Knowing the kind of incident reduced errors in the prediction of agreement about whether it was a good idea to write to citizens using Digital Post by 11% ($p < .001$). Knowing the kind of incident also reduced errors in the prediction of the frequency with which respondents sent Digital Post to citizens using the output manager, but only by 1% ($p < .05$). Thus, the association from incident to overall attitude was weak, and the association from incident to weekly use was negligible.

Table 5. Concrete incident versus overall attitude and frequency of use

Perception of incident	It is a good idea that we write to citizens using Digital Post	How many times a week do you use [the output manager] with a social security number?
	<i>Median</i>	<i>Median</i>
Improved service with Digital Post	Agree	5-10
Decreased service with Digital Post	Partially agree	5-10
Refrained from using Digital Post	Partially agree	1-5

To explore the association between the relationship level and the incident level in more detail, we analyzed the association between the kinds of incident and the eight questions about specific attitude elements, see Figure 2. These eight questions tapped issues known to influence people’s acceptance of technology (Venkatesh et al., 2003). Knowing the kind of incident reduced errors in the prediction of the respondents’ answer to the question “I provide better service to citizens when I use Digital Post” by 13%. Thus, for this question there was a weak association between the incident level and the relationship level. For the seven other questions about specific attitude elements the association between the two levels was negligible, reducing prediction errors by only 1-6%.

The respondents’ median rating of the four questions in Figure 2 about performance expectancy and effort expectancy was full or partial agreement that Digital Post improved their performance and required an acceptable effort, thereby complementing the overall-attitude questions in Figure 1. The two questions about social influence show that respondents strongly perceived an expectation from management to use Digital Post and tended to agree, at least partially, that their colleagues thought it was a good idea to use Digital Post. A Wilcoxon test comparing the respondents’ overall attitude (first question in Figure 1) with their colleagues’ overall attitude (fifth question in Figure 2) showed that respondents thought their colleagues were less in favor of using Digital Post than the

respondents were themselves ($p < .001$). This difference might indicate a difference between respondents and non-respondents or it might indicate a misperception of the colleagues' attitude as less favorable than it actually was. Finally, the first of the questions about facilitating conditions shows a somewhat mixed picture with respect to whether rules, procedures and the like were barriers to the use of Digital Post, whereas the second question indicated that Digital Post was generally experienced as well-integrated with the other systems used by local government.

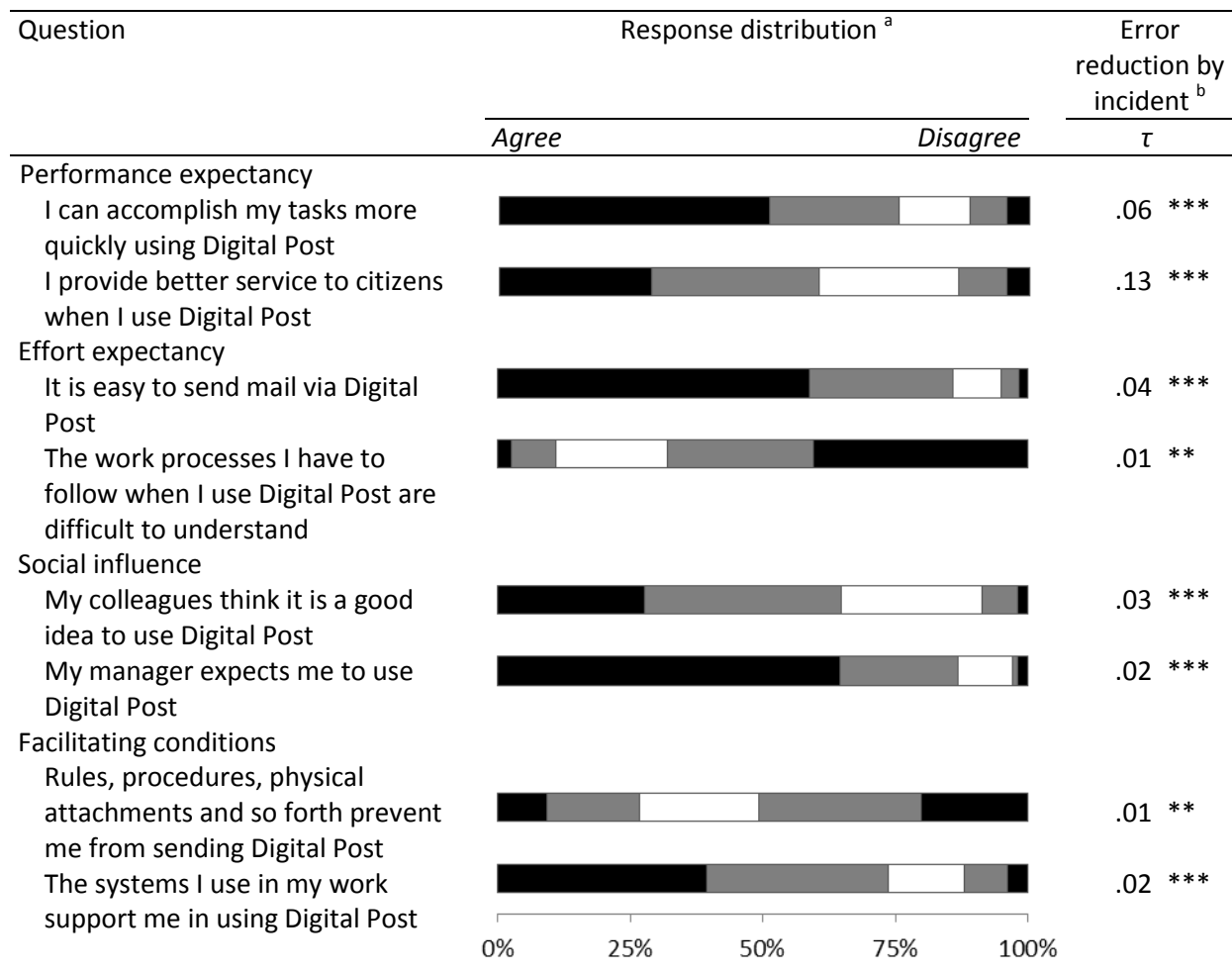


Figure 2. Detailed attitude

Notes. ^a The response options were agree (left black), partially agree (left grey), neutral (white), partially disagree (right grey), and disagree (right black). ^b Goodman and Kruskal tau test with kind of incident as predictor variable. ** $p < .01$, *** $p < .001$.

4.4 Incidents with Digital Post

The content of the incidents reported by the respondents fell into six categories: changes in service, attributes of citizens, changes related to staff, institution-level effects, staff-related operations, and citizen-related operations. The categories are further detailed in the following.

4.4.1 Changes in service

Changes in the service concerned the consequences for citizens of shifting the communication channel from physical letter to Digital Post. Digital Post was perceived as a better service when the citizen received the message more quickly and with less effort, thereby reducing the time to case completion for the citizen. In addition, Digital Post enabled the respondent and the citizen to communicate more flexibly and swiftly and to collaborate on eliminating errors of missing

information or erroneous data. This often compensated for rigid bureaucracy and benefitted the citizen. Furthermore, Digital Post ensured enhanced delivery assurance and documentation of the communication. Other sources of positive changes in the service perceived by respondents included around-the-clock access to the local government, independence of physical addresses, and the possibility of making written communication available to blind and dyslexic citizens through text-to-speech conversion.

Respondents described decreased service when there was a demand from local government on the citizen or the citizen did not access Digital Post. Failure to access Digital Post could have a number of consequences. First, it could result in reminder fees if the citizen failed to notice an invoice (unpaid tax, resource consumption etc.) and additional reminder fees if the reminder remained unnoticed. Second, an offer that should be accepted within a deadline (daycare, nursing home etc.) was lost if not acted upon. Third, citizens might be summoned to meetings, for example citizens that received unemployment benefits were summoned to meetings to ensure that they were actively searching for jobs. Failure to attend a mandatory meeting entailed reduced benefits. Fourth, an unnoticed Digital Post could lead to a delay in the commencement of a service of which a citizen was in need. A respondent reported an incident of a mentally disabled young man who received all the documents needed for assistive care via Digital Post, but the assistive care was delayed for several months because he did not see the digital post. Fifth, Digital Post was perceived as decreased service in situations where citizens were required to print the message from the local government but could not be expected to have access to a computer and printer:

“Most citizens that need help from the public sector are citizens that are not familiar with computers. Further, many cannot afford a computer. Moreover, a printer is also required. This may be excessive costs for many citizens. It is also my opinion that many that need help in most situations need personal contact with a case handler and due to the digitization, many local governments have cut off access to personal assistance.”.

4.4.2 Attributes of the citizen

In relation to the perceived change in service, respondents often mentioned attributes of the citizen. These attributes included IT skills, access to computer and Internet, whether the citizen was perceived as weak (elderly, homeless, drug addict, psychiatrically sick, blind, dyslectic, migrant with limited knowledge of Denmark and Danish etc.) or was not motivated for digital communication. When these attributes were present, citizens were at risk of not noticing their Digital Post and, thereby, experiencing the negative service changes mentioned above. Respondents described very practical matters in the reported incidents, for example how citizens that were hospitalized had difficulty getting access to computers and how elderly citizens without relatives had little access to help with Digital Post. Also, changes in a citizen's life situation (unemployment, divorce, illness etc.) could mean that the citizen was unable or unmotivated to meet the requirements of digital communication. Even citizens that were not considered weak might not attend to Digital Post. Respondents reported that such lack of motivation had considerable influence on their perception of the change in service resulting from the use of Digital Post.

Respondents also reported that they mitigated the negative consequences for citizens by not using Digital Post in situations where they were in doubt about whether the citizen was able to access Digital Post and the communication was of great importance to the citizen. A respondent responsible for daycare administration reported how she reflected on parents' digital abilities “[It] requires that the parents print the letter and send it back, or send an email to me. There are parents who will never get that done, it may be the very young parents, bilingual or low skilled. If I know in advance that it will not succeed, I will send a regular letter, so they have it in the mailbox and thereby can physically sign and deliver it at the municipality.”. In some cases, respondents even perceived Digital Post as counterproductive to the assistance of weak citizens:

“For the dysfunctional, it [Digital Post] is a bad solution (addicts, very socially disadvantaged, homeless, mentally ill, etc.). Many of these fail to communicate in this way – they are unable to take responsibility about digital actions, do not have a computer or have no [Internet] access, they are not aware of the arrival of digital posts and, generally, have an unstable life. Often, it ends in a situation where the citizen must be sanctioned for failure to answer or no show - and this, of course, only makes the overall situation worse”.

4.4.3 Changes related to staff

This category covers incidents in which respondents described changes in their work situation. The majority of the incidents described a reduction or increase in workload. Respondents reported that it was much easier to send messages digitally with a few clicks than to print, sign, pack, and send a physical letter. Also, the shorter turnaround time for corrections of errors in collaboration with the citizen reduced the cost for the respondents of returning to and completing these cases. The incidents reporting increased workload included citizens who were unsure whether their message had been received and phoned to be assured. Respondents also reported that they phoned or emailed citizens who had not reacted to Digital Post in situations where citizen action was required to move the case forward. Relatedly, respondents reported spending time locating documents they had previously sent digitally to print and physically send them to citizens in situations where written documentation was demanded by public institutions and the citizen had no printer. In addition, some citizens had difficulties attaching documents to their communications. These difficulties led to incomplete applications and a need for the respondent to contact the citizen again for further information and documentation. When a deadline had not been met because a citizen had not checked Digital Post, additional work was created for respondents who either had to stop benefits or to restore the situation for the citizen. Finally, Digital Post was not designed for workflows involving multiple actors, for example a document that must be signed by a citizen as well as his or her employer. Similarly, a physical letter that could previously be send to the address of a family, where both adults would have access to it, now had to be send as two messages, one to each adult. Some respondents were very conscious about when not to rely solely on Digital Post and spent considerable resources on these cases. One respondent, administering offers for nursing homes to elderly citizens, stated that “I always call the relatives to make them aware that there is an offer in the Digital Postbox”.

The positive changes in the respondents’ work situation were connected to the situations in which Digital Post improved the service delivered to citizens. Conversely, the increases in staff workload were connected to incidents in which the respondents also perceived reduced service to citizens who, for some reason, were not able to manage digital communication.

4.4.4 Institution-level effects

The respondents reported institution-level effects of Digital Post but they provided less detail about this category than about the other five. The institution-level effects included reduced costs (stamps, paper, and work time) and enhanced flexibility leading to a productivity increase. Respondents described the reduced costs and enhanced flexibility as the political drivers of Digital Post. Most of the descriptions of institutional effects were positive but there were also respondents who expressed that the use of Digital Post was costly and hampered flexibility. Both viewpoints can be true. Some respondents argued that allocated time was wasted when citizens did not show up because they had missed a message in the Digital Post, whereas other respondents argued that Digital Post enabled the flexibility necessary to summon another citizen. Most respondents acknowledged that Digital Post led to cost reductions but some respondents argued that they now spent more time than before and that the saved stamps could not cover the increase in operational time.

4.4.5 Staff-related operations

Staff-related operations concerned how the technology that interacted with Digital Post supported or hindered the work processes involved in the digital communication with citizens. This category is different from the one about changes in the staff's work situation in the way that the category about staff-related operations does not imply any change in the work situation – the respondents merely described how technology did or did not support their work.

Messages in Digital Post were perceived as easy to archive and easy to retrieve later for renewed use. Respondents also emphasized the time savings resulting from the integration of mail-merge functionality and from the ability of the output manager to distinguish automatically between citizens who should receive a physical letter or Digital Post. A respondent from an urban planning department described a work process that previously took several employees a whole day:

“[T]oday, the employee writes a cover letter with the URL for the plan, extracts names and addresses from the GIS system to Excel and the lot is being mail merged as usual, but now it takes one click and under 15 minutes for one employee to send all the messages. The citizen can see the plan instantly [and easily from the URL], may send their comments electronically and need not send a physical letter. Citizens are happy to avoid the many papers in the mail, the employees save time, we save postal costs and rainforest – it is clearly win-win.”

The respondents also reported incidents in which messages were hard to locate, resulting in late or no answers to citizens. The absence of receipts from Digital Post impeded the documentation process and future case handling. Attachments were hard to handle in Digital Post, and Digital Post was poorly integrated with the many systems that generated attachments for Digital Post. In addition, Digital Post provided limited support for work processes that involved actors other than the citizen and the local government (GP, police, court, hospital, a citizen trustee etc.) or parties that only accepted physical letters (e.g., because signatures were not considered authentic if scanned). Finally, respondents reported that citizens who sent messages to local government sometimes chose a wrong recipient because the local government's Digital Postboxes were not intuitively named. These incidents led to manual internal delivery of messages from one department to another.

4.4.6 Citizen-related operations

The category about citizen-related operations concerns the operations that citizens must perform to use Digital Post. The incidents reported by respondents in this category focused primarily on how the use of Digital Post was hampered by the technology that surrounded Digital Post. Respondents described that some citizens found Digital Post difficult to set up and operate. One source of confusion was the similarity between Digital Post and the similar system e-Boks; citizens did not understand the difference between the two systems. Access to Digital Post by means of NemID was another source of complexity, including difficulties with activation, re-activation (when citizens' initial attempt to activate failed), login, Java updates, operating-system updates, and the establishment and maintenance of an Internet connection. Also, file attachments, printers, and scanners were reported to cause some citizens problems. Citizens also had problems setting up alerts so that they would get a text or email notification when they received new messages in Digital Post. Several incidents revealed how Digital Post hampered the sharing of information among citizens. For example, relatives could previously sort elderly people's physical mail when visiting but did not see or even have access to the elderly people's messages in Digital Post. One respondent noted that “you can't just share the letter in the same way as if it was just lying on the kitchen table” and another that “if you are hospitalized, you can't ask your neighbor to empty the mailbox”.

5 Discussion

5.1 Digital communication with citizens is good service but...

The majority of the respondents think it is a good idea to communicate with citizens using Digital Post (Figure 1). It must be assumed that this finding facilitates the adoption of Digital Post because a positive attitude to the system increases the likelihood that the respondents, as local government staff, adopt Digital Post themselves and serve as champions of Digital Post toward the citizens. The respondents' positive attitude toward Digital Post is supported by their indications of how much they use Digital Post: They send digital letters to citizens at least as often as they send physical letters. The respondents' indications of their use of Digital Post are supported by Andersen et al. (2011) who found that Danish local governments responded promptly and, for the most part, adequately to email from citizens. However, Berger and Andersen (2013) found that when they, under the pretense of being a citizen, contacted local government by Digital Post, rather than by conventional email, only half of the local governments responded. This may suggest that local governments, at present, mainly see Digital Post as a means of government-initiated communication with citizens.

At the relationship level, the respondents find that they can accomplish their tasks more quickly and provide better service to citizens when they use Digital Post, and that using Digital Post is easy and supported by the other systems they use in their work (Figure 2). In addition, they strongly perceive an expectation from their management to use Digital Post. Thus, with respect to their own use of the system, the respondents perceive that all four factors in the unified technology acceptance model (Venkatesh et al., 2003) are positively present. These findings are consistent with the respondents' overall perception that it is a good idea to communicate with citizens using Digital Post. Notably, this perception is more strongly held by younger respondents, just as Shin (2012) found that decreased age correlated with increased use of e-government among local public managers. When the respondents express reservations against Digital Post it is mostly because they perceive that certain groups of citizen are unable to use it or must be expected not to notice communication via Digital Post. For groups such as elderly, homeless, or otherwise weak citizens the respondents give multiple examples of situations in which they consider Digital Post inappropriate. In 21% of the reported incidents, the respondents refrained from using Digital Post because they considered it inappropriate in the situation; in another 26% of the incidents respondents used Digital Post but felt that it degraded the service delivered to the citizen. These incidents illustrate the tension experienced by respondents between Digital Post, the use of which is increasingly mandated in local-government procedures, and the provision of good service to citizens. Following Roman (2013) and Wastell et al. (2009), the tensions are, probably, experienced as especially troubling because they tend to hit the weakest citizens the hardest.

The near even split between incidents reporting improved service and incidents reporting negative consequences emphasizes that the respondents' positive overall attitude is an aggregate of a mix of issues. This finding is formally expressed in the weak statistical associations between responses to questions at the relationship and incident levels. While the reported incidents are not representative of the respondents' overall attitude, we contend that they are accurate. The issues described in the incidents show that Digital Post is not flawless but the flaws are, for the most part, not sufficiently severe to determine the respondents' overall perception of the system. Their overall attitude is, instead, primarily determined by other factors, which for example may include a general belief that government benefits from technology. Because informal conversations often include concrete incidents as examples (Edvardsson & Strandvik, 2000), the discrepancy between respondents' overall attitude and concrete incidents may suggest that Digital Post is portrayed in an overly negative manner in informal conversations compared to people's overall attitudes. This provides a possible explanation of our finding that the respondents, on average, perceived their colleagues as less in favor of using Digital Post than they were themselves. It also shows the value of having data at the relationship level as well as the incident level.

5.2 Content categories in staff perception of e-government service

The incidents contained six categories of content, namely changes in service, attributes of citizens, changes in the staff's work situation, institution-level effects, staff-related operations, and citizen-related operations. The categories underline the complexity and interdependencies involved in providing e-government services. Thereby, the categories also show the multiplicity of factors needed in models of e-government adoption. For example, the category about changes in service points toward factors from service quality models (Parasuraman et al., 2005), the category about the citizens points toward factors emphasized by Shin (2012) in his discussion of public managers' commitment to public service, and the category about the staff points toward factors such as workload. In particular, Digital Post is perceived as contributing both positively and negatively to the service delivered to citizens. The perception of positive impact originates from reduced staff workload and institutional cost reductions and is, thus, related to both system quality and information quality. This accords with a study of a similar system in Taiwan (Sun et al., 2006) and with the positive effects generally expected from e-government. Our study also reveals how e-government can enhance staff-citizen collaboration and, thereby, mitigate the consequences of otherwise bureaucratic procedures or create new services. It is the co-occurrence of appropriate technologies, capable citizens, motivated staff, and relevant communication content that leads to the perceived service improvements, workload reductions, and increases in efficiency. Digital Post as such neither improves service nor increases efficiency.

The incidents reporting decreased service reveal that the service decrease may take multiple forms, including increased fees, reduced benefits, delayed assistance, difficult-to-share documents, requirements for the citizen to print government documents, and cost requirements for computer, printer, and Internet access. The perception of decreased service is often related to what the respondents call weak citizens. According to the respondents, there are a number of situations in which Digital Post works against equality of treatment of the citizens, as previously suggested by Bannister and Connolly (2014). Whereas Shin (2012) showed that a high staff commitment to public service had a positive impact on technology adoption, our data suggest that the relation between public service commitment and technology adoption is moderated by the staff's perception of the quality of the service: 94 respondents reported incidents where they had refrained from using Digital Post to avoid providing a service they perceived as too poor. The modest adoption of digital communication between government staff and citizens (<reference temporarily removed to preserve anonymity during reviewing>; Sun et al., 2006) may, in part, be explained by an incompatibility between staff values and the values incorporated in digital communication (Carter & Bélanger, 2005; Rogers, 2003).

We consider it an important finding that the respondents reported multiple incidents in which Digital Post increased rather than decreased workload. Increased workload was experienced in incidents involving weak citizens, a degradation of the perceived service, and technology that did not support the operations involved in the task. There were multiple sources of the increase in workload. First, staff must help citizens understand and master the technology, and when they do not the staff must correct the resulting errors. Second, various basic operations are not supported by the technology. These operations must be performed manually in order to use Digital Post. Third, communications that involve multiple staff members or multiple citizens are not supported well by Digital Post. Fourth, limited integration of Digital Post with other technologies creates extra work. Fifth, inadequate configuration of Digital Post requires internal message transfers that are extra work and delay case handling. Sixth, citizens cannot share a message in Digital Post as easily as they can share a physical letter, thereby causing extra work, or breakdowns, at the citizen's end.

5.3 Implications for research and practice

We see four implications of our study for research on e-government. First, the respondents perceive speed and ease to be the main advantages of digital communication with citizens. In a number of

cases speed is integral to service quality because it enables citizens to meet tight deadlines or government staff to request supplementary information without delaying the case. In other cases, speed and ease appear to be considered virtues in their own right. The primary focus on speed and ease may be indicative of the transaction stage, of which Digital Post is an example. The finding by Shareef et al. (2011) that different factors influenced citizens' adoption of e-government services at different stages should also be investigated for government staff's adoption of e-government.

Second, the citizen's situation is important to staff's perception of whether a service like Digital Post is good service. This aspect of the respondents' perception of Digital Post appears insufficiently captured by the technology-acceptance models, which focus on an individual's own use of a system, and warrants supplementing such models with models of service quality in future studies of government staff's adoption of e-government. The respondents' sense of responsibility toward the citizens they serve also suggests that e-government provides possibilities for enriching studies of relationship management (e.g., Reinartz, Krafft, & Hoyer, 2004) with insights about relationships in which the pivotal issue is not customer retention.

Third, assessments of e-government and other services at the relationship and incident levels target different aspects of the service. This finding, supported by previous studies (e.g., Edvardsson & Strandvik, 2000; Odekerken-Schröder et al., 2000), has important methodological implications. For example, assessments at the incident level cannot be taken as indicative of overall attitudes at the relationship level. Thus, the common practice of asking interviewees for concrete examples may provide rich detail and accurate diagnostic information but it is, for example, questionable to use counts of positive and negative examples as indicative of overall attitude or to identify top barriers to e-government adoption on the basis of the frequency of such examples.

Fourth, the concrete incidents described by respondents show the diversity of the real-world situations into which systems like Digital Post are introduced. We are somewhat concerned that e-government research pays insufficient attention to this diversity and, thereby, to the situated action required to deliver good service to citizens. Survey-based studies, such as ours, are popular in e-government research but limited in their receptiveness to the rich detail necessary to appreciate diversity and situated action. To some extent this limitation amounts to black-boxing the very issues we need to understand in a research field concerned with how technology may enable, and otherwise affect, interactions between government and citizens. Ethnographic case studies may complement survey-based studies by providing insights into the multiple ways, intended as well as unintended, in which government, citizens, and technologies transform each other.

In terms of implications for practice, we want to emphasize four issues that are important to achieve the intended effects from e-government initiatives such as Digital Post:

- In spite of an overall positive attitude toward the use of a system, staff may still refrain from using it in a number of situations. These situations may be sufficiently numerous to warrant system changes or a revision of the intended effects.
- Staff is sensitive to tensions between the provision of good service to citizens and the consistent use of mandated systems. For weak citizens they will often try to compensate for a rigid system, thereby possibly annulling intended effects.
- Local governments are likely to mature slowly with respect to e-government because the barriers to full adoption are politically charged and because the partial adoption of a system at one maturity stage will tend to block or delay systems at successive stages.
- Local governments should draw on their staff's rich experiences with overcoming barriers and revising work processes in the day-to-day adoption of e-government and on their decisions about when it is not appropriate to use, for example, Digital Post.

5.4 Limitations

Three limitations should be remembered in interpreting the results of this study. First, while the 448 respondents are representative of the population of local government staff with respect to key demographic variables, they form a modest sample compared to the size of the full population. We cannot rule out that the respondents' perception of Digital Post differs, in some respects, from that of the full population of local government staff. Second, we conducted our survey half a year before the use of Digital Post became mandatory for citizens. It caused some public debate that Digital Post was to replace physical letters in the communication between local government and citizens. This debate may have sharpened the respondents' awareness of the possible implications of Digital Post and, in particular, sensitized them to citizens who were overwhelmed or distressed by the prospect of digital communication with their local government. Third, this study is based on a survey and we already touched upon the limitations of survey-based studies in the previous section. Specifically, the data about the respondents' weekly use of Digital Post are self-reported by the respondents. Thus, our finding that at least as many digital as physical letters are sent to citizens reflects the respondents' perception of how many digital and physical letters they send. For actual counts of the number of digital (and physical) letters sent by Danish municipalities, see (<reference temporarily removed to preserve anonymity during reviewing>).

6 Conclusion

We have surveyed local government staff's perception of how their communication with citizens is affected by the Danish e-government initiative Digital Post. At the relationship level, 82% of the 448 respondents were in favor of digital communication with citizens using Digital Post. However, at the incident level the respondents were about evenly divided between those describing an incident in which Digital Post improved the service delivered to the citizen and those describing an incident of decreased service. For 21% of respondents the decrease in service had been perceived as so severe that they in the reported incident had refrained from using Digital Post. We extracted six content categories from the incident descriptions. The categories concerned the perceived change in service, the citizen's readiness to digital communication, the change in the staff's work situation, the institutional effects, and how the technology supported or hampered the operations to be performed by staff and by citizen. Perceived negative changes in service resulted from lost welfare benefits, delays, and reduced possibilities for sharing the communication with others. This may especially impact weak citizens. In addition, the negative changes in service related to perceived increases in staff workload to assist citizens in digital communication. Finally, the study reveals that the operations that staff and citizens need to perform to communicate digitally are in a number of situations hampered by technological issues such as lacking interoperability, flawed configuration, and misalignment with work processes.

In November 2014 it became mandatory for government and Danish citizens to communicate using Digital Post rather than physical letters. This transition multiplied the implications – good and bad – of Digital Post.

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Paper 7

Berger, Jesper B. (2015). *E-government harm? Never heard of it!*
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E-GOVERNMENT HARM? NEVER HEARD OF IT!

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Abstract

Technology and organizations have matured and tens of thousands of IT systems are now operating in public sector around the world. Some governments choose e-government strategies that build on natural, incremental growth, building trust in collaboration with citizens. Others choose more cynical strategies driven by performance goals. Recent years have revealed governments enforcing e-government onto citizens – measurements indicate that it drives down costs dramatically. This may quickly become the new trend amongst economically constrained governments. E-government scholars have been preoccupied by assisting governments defining and removing barriers to benefits realization, especially how to facilitate citizens' adoption of e-government. Though appropriate, such scholarly knowledge may be of little value in a context where the citizen is enforced to use e-government. Further, there may be totally different problems that need to be explored, for instance the unintentional harm that e-government may impose to citizens or to staff and the wider societal impact on public sector ethos. This paper calls for critical e-government research into e-government harm, which requires scholarly debate on e-government ethics, on e-government harm ontology and epistemology. This may ultimately lead to findings that would allow sustainable coercive e-government.

Keywords: E-government, critical research, harm, coercive e-government, ethics

1 Introduction

For many years it has been appropriate for e-government scholars to point to the immense waste of public sector investments on IT projects that were poorly managed, systems that were bad designed or were just not aligned with work practices and organizational context (Goldfinch, 2007). Meanwhile, practitioners have improved project management and understood the need for organizational change management while technologies have become easier to develop and provide more opportunities, improved usability, accessibility etc. There is now a plethora of well-functioning IT systems in the public sector that operate on a daily basis, non-stop-shops, portals, complex systems across organizational boundaries, secured by eID and governed by single-sign-on providing a vast variety of public services - both informational but to a still greater extent, complex transactional services (Bannister and Connolly, 2014). Reports of tangible outcome of e-government are still sparse. The Danish government launched a very ambitious digital-by-default e-government strategy in 2011 (The Danish Government et al., 2011). Numbers of key transactions has doubled from 2012 to 2013 and will triple from 2013 to 2014. Alongside, however, studies have shown lower adoption rate than expected, leading to economic loss due to a priori reduced funding (Berger and Hertzum, 2014) and perceived negative impacts on weak citizens and increased staff workload (Berger, 2014b). The UK and Denmark have chosen a digital-by-default strategy and more are expected to follow (European Commission, 2012).

One prevalent stream in e-government research has been to examine the progression of e-government mostly measuring numbers and types of provided public services (e.g. Norris and Reddick, 2013). Another major stream has been the factor analysis of citizen adoption of e-government using variants of TRA, TPB, UTAUT etc. examining constructs like perceived usefulness, perceived ease of use, trust, risk etc. (Rana et al., 2012). Further, scholars have been lingering over the transformative powers of e-government (Scholl, 2010) and the various stage model approaches of cataloguing, transactions, vertical and horizontal integration, synthesized by Lee (2010). Even though the behavioral approach

has been criticized for unrealistic assumptions of rational choice on behalf of full information (Bagozzi, 2007) and the founder of UTAUT has declared that use of the models cannot predict usage (Venkatesh et al., 2012), they are still widely applied (Rana et al., 2012). The stage model approach likewise has been criticized for being poorly empirically based technological deterministic wish-thinking (Coursey and Norris, 2008). Even though the general model was challenged by Andersen et al. (2011), there has been no real alternative to how e-government may progress. The stage model approach is not fading; the most cited (Layne and Lee, 2001), had the most citations in 2013 (Google Scholar, 1. November, 2014). E-government is perceived as being voluntary by nature, which normally is a hidden taken-for-granted assumption, though sometimes explicitly stated (e.g. AlAwadhi and Morris, 2008; Axelsson and Melin, 2012; Tan et al., 2010). Moreover, e-government is perceived as positive and only entailing good (Heeks and Bailur, 2007; Madsen et al., 2014). Critical research in IS and e-government is sparse (Heeks and Bailur, 2007; Madsen et al., 2014; Myers and Klein, 2011) and research into ethical issues in e-government is sparse (Roman, 2013). Only in very recent studies, it has been argued from a conceptual approach that e-government actually has an impact on values, can be bad and have a negative impact (Bannister and Connolly, 2014).

The aim of this paper is to motivate and lay a ground for research into *e-government harm* as a new and much needed research stream. E-government harm research is much needed to be able to mitigate unintentional harm from e-government. The paper does this by exploring the nature of e-government harm and how to investigate it.

2 Related Work

2.1 E-government harm studies

To find studies of e-government harm is difficult when harm does not exist as a notion. Indications of harm may be sought indirectly from e-government studies that are designated as critical studies. Critical IS studies has traditionally been sparse (Orlikowski and Baroudi, 1991) and current reviews confirm that this has not changed (Howcroft and Trauth, 2005; Myers and Klein, 2011). Also critical e-government studies are sparse (Heeks and Bailur, 2007; Madsen et al., 2014).

Wastell et al. (2009) report from an ethnographic study of the use of an e-government system to help identify and protect vulnerable children. Mandating the system entailed negative effects on child protection and increased staff work stress to a degree, where the social worker union send a protest to the minister. The authors report from a stressful work environment, where employees spent more time registering information in the system than observing children. The system was launched alongside with micromanaging according to personal performance goals. Kvasny and Keil (2006) examined the uptake of computer use in two cities, where access to computers were given free of charge to citizens. The authors find that even if given freely, a divide persistently existed in disfavor of those citizens with lesser cultural and social capabilities derived from longer working hours, less formal education, less access to networks with computer knowledge, less exposure to computer training through jobs etc. They recommend that scholars engage more deeply to understand the nature of the world of the underserved people. No studies Further, Berger (2014b) reports from an explorative study of local government administrative clerks' perception of mandated electronic communication with citizens. Staff reported on enhanced workload due to system design flaws, lack of system integration and citizens not being able to manage the technology resulting in increased citizens' inquiries and errors. Moreover, staff found that citizens avoid applying for welfare aid loose benefits due to lack of electronic communication capability and, that some weak citizens feel anxiety and inferiority.

2.2 E-government ethics

An ethical behavior is a right behavior, while an ethical code of conduct comprises the rules after which to assess what is right or wrong behavior (Caza et al., 2004). The two major streams in ethics theory are the teleological stream and the deontological stream (Hall, 2014). The *teleological view*

prescribes to maximize the benefits and minimize the harm in a way that the end justifies the means; the individual is not sacred and may be offered if it brings more benefits to others. According to the *deontological view* there exists a universal code of conduct, for instance, it's wrong to kill. As e-government is seen as the child of IS and public administration, ethics in e-government may stem from computer ethics or administrative ethics. Studies in computer ethics has been preoccupied by concerns of intellectual property, privacy, security, confidentiality, surveillance and inequity in access (the Digital Divide) but with limited focus on e-government (Roman, 2013). No studies have been found on unethical e-government.

Cooper (2004) delineates different theoretical questions to public administration ethics. First, the question of *who's ethics to follow?* Cooper highlights four approaches, namely the constitution, the citizenship, individual virtue and the public interest. Another big question about ethics in public administration regards the *loyalty of the public employee to the organization or to "what is right"?* Loyalty may be to the organization versus to "what is right". In the Weberian bureaucracy the employee is bound by the hierarchy and must follow orders and ultimately, staff must be accountable to the political decision. Cooper reflects from experiences with ethics workshops where public servants report on instances of "what is not right" (e.g. violating the law, directed resources into someone's pocket, doing things that poisoned the environment, abusing power for personal ends, or regularly lying to the public and politicians) They had either felt impotent to act or had acted and suffered significantly. Thirdly, *when to treat people equally in order to treat them fairly and when to treat them unequally?* He argues that the "burgeoning of assertive diversity" in society entails that if administrators treat all citizens after the same standardized schema, most citizens will frequently feel unfairly treated. The challenge is that sometimes we need to treat citizens the same way, but at other times, we need to treat citizens differently in order to maintain fairness. The question is which criteria to apply to make that decision?

How should an ethical behavior be ensured? Ekhaton (2013) designates a code of conduct, a regulatory body, transparency, prevention and control, and supra-national institutions as means. *Codes of conducts* may act as a guide of individual behavior, but can also be problematic. While codes are enacted in situ by individuals, they are subjective to interpretation, thus may not entail the same behavior in different contexts. Second, codes are formulated by those in power, thereby not reflecting the needs of the powerless. Third, codes may be formulated to legitimize the behavior of those that formulated the code. Lastly, a finite set of codes cannot cover an infinite complex world. *A regulatory body* may assess ethical behavior on particular incidences, hereby ensuring common criteria for ethical behavior. The downside is that the institution will be sensitive to political or economic pressure from authorities. *Transparency* can maintain ethical standards by disclosure of information that will enable the citizenry more closely to follow the activities of public organizations. *Prevention and control* includes fiscal scrutiny, protection of whistle-blowers, encouragement of public servants to report unethical behavior and public sector consultation with the citizenry during planning and operations in public sector. *Supra-national* means as International conventions (UN, OECD etc.) or supra-national bodies (e.g. EU) may regulate and maintain ethical behavior.

3 Theory

3.1 Critical IS research

Howcroft and Trauth (2005) outline five key themes in in their handbook of critical research, though, they should not be understood as rigid criteria:

Emancipation - helps freeing individuals from power relations and removes causes of alienation and domination. The authors acknowledge the fact that one person's emancipation may constrain another person.

Critique of tradition – to disrupt the status quo, encourage dispute, which inevitably "upset existing patterns of power and authority" (Ibid., p. 3) and to question the taken-for-granted assumptions of

status quo by including a broad context of the organizational setting of the research, e.g. political, historical, economic and ideological. Not only critique of the status quo, however, but also that the way forward cannot be altered is pivotal. Oppression of workers by the organization is a specific issue as is other marginalized groups. While this may lead to research that are confined to being opposed, thus being perceived as negative, the authors stress that researchers should “suggest alternative and radically different view of the world, on which emphasizes change but in a more positive way” (Ibid., p. 4).

Nonperformative intent – the denial of managerial and economic efficiency as the only guidance for organizational development as opposed to a concern for social relations. This is seen in opposition to positivist and interpretive research, which aim to create knowledge that supports the efficiency regime. IS has been argued to reinforce existing power relations. The underlying assumptions and justification of IS to deliver cost performance goals is of special concern to the critical researcher. First, the focus is on business functioning and achievement of performance goals and overlooks the complex social and organizational context, thereby missing the opportunity for deeper and more significant change. Second, if design is narrowed to achieving performance goals, the wider organizational, social and political impact is not foreseen. (Cecez-Kecmanovic, 2005).

Critique of technological determinism – the assumption that technology evolves automatically and that development is determined by technology. Technological development should be understood in a broader social and economic context.

Reflexivity – which is grounded in the denial of objectivity and “[i]n doing so it [critical research] questions the validity of objective, value-free knowledge and information that is available, noting how this is often shaped by structures of power and interests” (Howcroft and Trauth, 2005). The choice of research topic and methods has consequences and the researcher must perform self-reflexivity regarding the involvement in activities that “perpetuate global inequalities and existing power bases within society” (Ibid.).

How is the researcher supposed to conduct critical research? Richardson and Howcroft (2006, p. 145) describe the tasks of pursuing insight, exposing critique and formulating transformative redefinition. Insight entails that the researcher is concerned with the conditions that constitute the background for the meaning and interpretations by the actors. The authors highlight a crucial aspect of critical research in order to hear the “many voices that have been marginalized at the expense of the dominant view” (Ibid.). According to critical researchers, there is “nothing inevitable about what technology we have and how we use it” (Ibid.). Transformative redefinition seeks change in a more positive way and suggests a radically different world view. In doing this, critical researchers – to some extent – may prescribe interventions. Critical researchers will refuse to participate in research activities that legitimizes negative impact of IS and feel a responsibility to the disclosure of it (Cecez-Kecmanovic, 2005). The author further states that critical research is “based on the conviction not only that it is legitimate but that it is indeed an obligation for a researcher to actively engage in the transformation of IS practices that will contribute to a more democratic workplace with greater degree of autonomy and human agency, and ultimately lead to less repressive and more equitable social relations” (Ibid., p. 23).

Grounded in the ideas of critical theorists Bourdieu, Foucault and Habermas, and structured by the primary tasks for critical research (insight, critique and transformative redefinition), Myers and Klein (2011) suggest a set of principles that may support the work of the critical IS researcher. Principles 1-3 applies to ‘critique’ and 4-6 to ‘transformation’; ‘insight’ is presumed to be covered by principles guiding interpretive IS research and is not repeated here.

1. The principle of using core concepts from critical social theorists helps researchers formulate appropriate research questions and strategies
2. The principle of taking a value position (this principle drives principles 4-6). This principle stands as a part of the necessary reflexivity to enable critical researchers and others to critically view the research

3. The principle of revealing and challenging prevailing beliefs and social practices. The legitimate use of knowledge and information is stated by the authors as especially relevant in IS research
4. The principle of individual emancipation. This principle challenges the critical researcher to deal with human issues and the existence of something being “unjust, harmful or at least unfair” (Ibid., p. 27)
5. The principle of improvements in Society. The principle states that critical research is not merely to create emancipation on an individual level but aims at more structural changes on a societal level
6. The principle of improvements in social theories. In contrast to Cecez-Kecmanovic (2005), the authors suggest that “explicit procedures of evidence giving and the acceptance of the idea of fallibility” (Ibid., p. 28), which in return supports the researcher in reflexivity and thereby adjustment may improve knowledge generation.

4 Research approach

Critical IS research is sparse and, the critical research aspects are not necessarily explicitly stated in the research, hence critical IS research is not grounded in common frameworks (Myers and Klein, 2011). Critical e-government research is also sparse and with no common grounding. When there is no common recognition of a phenomenon, it does not exist cognitively. Negative impact from e-government, designated *e-government harm* thus, does not exist. To be able to study a phenomenon requires an ontology and an epistemology that must be accompanied by a supportive and appropriate research perspective (Blaikie, 2007). The aim of this study was to argue for the need to establish a research phenomenon and a plausible research trait and based on principles from critical IS research.

5 The nature of e-government harm

In order to offer sustainable models of e-government for practitioners, we must establish research into the unintentional negative impacts of e-government or *e-government harm*. E-government is by nature perceived as voluntary by scholars even though coercive e-government is performed by governments (Bannister and Connolly, 2014) and is expected to be adopted by more countries (European Commission, 2012). In voluntary e-government, citizens may avoid e-government harm by simply not adopting e-government, thus voluntary e-government leaves few tangible experiences of e-government harm to study. To expand the knowledge on e-government harm it will be appropriate to direct scholarly attention to coercive digital-by-default national e-government strategies that leaves citizens (and staff) little options of avoiding e-government, thus little option to avoid e-government harm. The e-government harm may be imposed at different levels (society, organization, individual), to different actors (public employees, citizens), within different segments (e.g. the elderly) or domains (local government services, educational sector etc.) and by various means (captive use, legislation, economic incentives etc.), hence the nature of the imposed harm must depend on the enactment of the coercive e-government strategy. Different coercive strategies impose different harm. E-government strategies constitute at its core selection of scope, design of technology, development, implementation and operation together with funding issues and political approval. It would be obvious that e-government harm is not planned for, thus unintentional harm may only emerge after the implementation phase where technology has come into use. This is where objective technology has become enacted technology that produces uncertain outcomes (Fountain). The pre-operational phases, hence, are of minor interest regarding e-government harm.

- (1) It is plausible that coercive e-government produces e-government harm
- (2) E-government harm depends on the particular coercive strategy and its enactment
- (3) E-government harm is related to e-government operations

As an initial framing of e-government harm ontology it is appropriate to examine the few sources of e-government harm given in this paper that stem from coercive e-government (Berger, 2014b; Wastell et al., 2009). The e-government initiative may have grave unintentional effects on the exact segment of citizens that the initiative is supposed to support. Wastell et al. (2009) report on a rigid system regime that retains parents and children in a deprived client role. They found that it was not the IT systems as such that caused the problems, but the performance based micro-managing strategy in which the system was a tool, that was the source of the harm. According to staff, Berger (2014b) found different types of e-government harms, namely that citizens were deprived their access to welfare benefits, that costs were imposed to citizens, that beneficiaries lost benefits, that citizens' special needs were delayed and that enforcement of the digital channel in itself counteracted the assistive efforts of certain citizens. Especially, what may be considered the weak citizens; they experience emotional stress or anxiety facing coercive e-government, which attributes to the combination of lack of capabilities and resources combined with the dependency of public sector.

(4) Coercive e-government may harm certain citizens in certain situations in various ways

Both studies find that public employees are affected negatively by the negative impact on the citizens, hence negative impacts from e-government has a negative effect on public employees' satisfaction with their work life. Further, public employees experience increased workload from the coercive e-government initiative due to increased transactions with citizens with insufficient resources and capabilities that need more assistance and produce more errors. Staff also perceives increased workload from various e-government barriers grounded in technology design flaws, failure to support work processes, lack of system integrations, legal issues and lack of collaboration from other public institutions (Berger, 2014b). These findings are in line with barriers reported from literature reviews (Gil-Garcia and Pardo, 2005) and from practitioners (Irani et al., 2007; Ndou, 2004). Not only Staff, but also managers may be negatively affected in their endeavor to balance CEO expectations, citizens' needs and staffs' working conditions (Berger, 2014a).

(5) Coercive e-government may have negative impact on public employees' work life quality

(6) Coercive e-government may increase public employees' workload

Berger and Hertzum (2014) found that a coercive e-government strategy had negative impacts on public organizations due to the economic incentive model that was imposed to lower levels of government from central government due to overly optimistic expectations of efficiency gains. The lower level of government experienced a direct economic loss from the e-government initiative, which inevitably would lead to reduced headcounts or reduced citizen service.

(7) Coercive e-government may impose economic loss to public organizations

Berger and Andersen (2013) found a widespread alienation amongst staff resulting in less attention to the citizen and lack of accountability towards the end-to-end service process, which primarily was attributed to the complexity and malfunction of the e-government initiative. Berger found that shift from face-to-face communication to electronic communication increased alienation amongst staff, which is in line with other studies (Roman, 2013). Moreover, Berger (2014b) found that staff perceived the coercive strategy unbalanced and unfair towards citizens, thus support and loyalty towards central government and central e-government strategy initiatives was reduced.

(8) Coercive e-government may negatively change public sector ethos

The notion of harm is a result of an assessment of what is right and wrong, thus in the above presuppositions 4-8 lies implicit a set of rules that was applied by this author and the set of rules constitutes the instantiation of an e-government ethics that this author subscribes to. E-government ethics is inseparable from the assessment of e-government harm. Coercive e-government may be justified from the consequential ethical view, where performance goals justify enforcement of e-government onto individuals. From the deontological view, however, coercive e-government must be deemed unethical as far as it imposes harm to individuals. This author subscribe to the ethical view

that there are some universal rules that must govern e-government. From this vantage point, one overarching ethical rule may safeguard the various candidates for harm.

(9) E-government must not harm citizens, staff, organizations or public ethos

High age, low education and income level, and unemployment have generally been reported to relate to low access to computer and Internet due to lack of personal capabilities and resources ((Helbig et al., 2009). From the already stated experiences of the nature of harm, more specific rules can be formulated that aim to protect the groups with lack of digital accessibility. Especially, the combination of lack of digital accessibility and public sector livelihood dependency constitutes a potential deprivation by coercive e-government that must be mitigated.

(10) Coercive e-government must never include citizens born before 1950

(11) Coercive e-government must never include public beneficiaries

E-government demands that the citizen in one way or another has a) access to a device and b) access to the Internet. Both of these requirements impose economic constraints on the citizen when e-government is enforced onto citizens. An ethical stance may be that it is not just to increase costs for citizens because the government has decided to cut public costs, especially because it hits less resourceful citizens relatively more.

(12) Coercive e-government must not increase the taxation level of the citizen

Apart from citizens, an e-government ethics must protect public employees from harm. Public employees are considered a weak and most vulnerable part because they formally must abide the organization as part of the public sector that has introduced coercive e-government as the source to harm, even in situations where they experience wrongdoing exactly from this initiative (Cooper, 2004). Since operational staff has the contact with citizens, they are a valuable source for discovering harm to citizens. Moreover, e-government is driven by performance goals; hence, the ultimate effect of e-government is layoff of staff. They may even experience the dilemma that struggling to make the e-government initiative work may cost them their own job, as reported by Berger. Staff needs to be empowered to ensure they don't get harmed by coercive e-government and ensure valuable citizens' feedback to the operational setting.

(13) Funding of public organizational units must not be reduced before two years after implementation of an e-government initiative

(14) Staff representatives in a public institution may veto or pause an e-government initiative

Public institutions on the institutional level will be shaped by the institutional forces and urged to legitimize itself according to the values inherent in the institutional field (Scott, 2008). The e-government field may be shaped by an overly technology optimistic and deterministic view and a widespread belief on the ultimate positive changes attributed by e-government. The field may leave little room for doubt or criticism and public institution that do not experience the anticipated exclusively positive outcomes in the anticipated rate may silence themselves and not reveal doubts in the current discourse. To be able to reveal negative economic from coercive e-government it must be ensured that the grounds on which the political decisions have been made, are accessible and transparent, and further, that external parties (as researchers) may have access to appropriate data in order to recurrently evaluate the e-government initiative.

(15) Coercive e-government initiative business cases must be accessible for external evaluation

The Public Sector Ethos is the most intangible candidate for e-government harm, thus, the most difficult to assess and maintain. E-government related negative changes at the societal level may happen incrementally thus hard to notice, however, they will be hard to reverse and, thus, must not be ignored (Roman, 2013).

(16) Anticipated negative impact from coercive e-government and an evaluation scheme must be included in the political approval process

In return for the modern democracy that exerts a regulating effect on the individual, the State has promised to protect its citizens. In general, coercive e-government changes this role of government by valuing common performance goals higher than the wellbeing of the individual. The overall aim of an e-government ethics, thus, is to protect the organization, staff, citizens and society from - the Government. We cannot rely on the ability of the Government – or the public sector as such - to exploit e-government to its furthest extent at the same time as protecting and mitigating the harm that is exactly been caused by this exploitation. Ethical codes of conduct has its advantages and disadvantages (Caza et al., 2004). Codes of conduct can never be exhaustive and will always be interpreted in the specific context, which leads to different applications of the ethics, thus the compliance with the e-government ethics must be scrutinized and assessed recurrently. The following institutional framework is suggested to maintain coercive e-government ethics (inspired by Ekhatior, 2013).

(17) A National Council of E-government Ethics interprets compliance of the principles for ethical coercive e-government in particular incidences from an expert and a public view

(18) A National Citizens´ E-government Complaints Board awards compensation for citizens, where public institutions have violated the principles for ethical coercive e-government

(19) A State E-government Audit Department performs control and consultancy towards public institutions of compliance of the principles for ethical coercive e-government

(20) A Coercive E-government supra national convention (e.g. EC) commits the government to comply with the principles for ethical coercive e-government and to allocate appropriate funding

Conclusively, it is asserted here that e-government harm has different forms, may be imposed at different levels (individual, organizational and societal) (4-7), that e-government harm may be narrowly connected to the coercive form of e-government (1-3) and that study of e-government harm is inevitably connected to studies of e-government ethics (9-16) and remedies to maintain this ethics (17-20).

5.1 Researching e-government harm?

Surely, every e-government scholar will agree that e-government must not impose harm, but to what degree is there an obligation for e-government scholars to actively work against purely performance intent and technology determinism to promote emancipation of public employees and citizens as encouraged by the critical IS researcher tradition (Cecez-Kecmanovic, 2005)? The ruling discourse is pro e-government, thus, to openly recognize e-government harm may provoke those in power, be personal demanding for the researcher and limit the impact of research. The e-government harm scholar must, thus, maintain a positive stance towards e-government but actively investigate and promote alternative enactments that mitigate harm, thus following the tasks and principles of critical IS research (Howcroft and Trauth, 2005). If the e-government scholars and the community should work actively to prevent and mitigate e-government harm, what should the role of the researcher be and what approaches should be taken?

The core research questions to be asked are: What is e-government harm? What are the antecedents of e-government harm? How can e-government harm be mitigated? The nature of the different forms of e-government harm on different levels must be explored. How to measure it and what methods to apply will depend on the various forms of harm. Since e-government harm is rooted in the situated actions performed by staff and citizens, qualitative field-studies are applicable. Since e-government harm is by far a recognized notion either by researchers or by practitioners (administrators or politicians) it is paramount to enter the field without presuppositions of, what to find, but maintain an explorative approach. Harm may prevail by coercive e-government against weak citizens. In exploring harm to weak citizens, the challenges of dealing with sensitive respondents must be recognized. Public

employees may prove to be appropriate informants for these citizens (Berger, 2014b), however, this may also be regarded as sensitive because staff must reveal negative impact from the processes and actions of their own institution. E-government harm to public employees may also be sensitive because the existence of increased workload and reduced work life quality may be seen as attributed to poor management, thus as disloyal for staff to reveal. Collaboration with interest groups as the elderly and trade unions may ameliorate obstacles. Harm from e-government may be attributed to organizational and institutional forces, and enacted technology (Fountain, 2001). The understanding of the importance of the organizational hierarchy and bureaucracy together with existing rules, norm and beliefs may constitute salient antecedents to e-government harm. The prevalent technology determinism in e-government may entail that the embedded technology in situ (the enacted technology) invokes unanticipated outcomes, amongst others, harm. Apart from investigate e-government harm and the antecedents to harm, scholars must formulate alternatives and alterations to the e-government strategy that eliminate harm. E-government ethics and ethics maintenance institutions constitute one path; alternative implementation schemes and technology design improvements another. A third is new and creative use of technology for the purpose to lower computer capability requirements. For instance, to reduce techno stress on less capable citizens, technology may be required to automatically shift from computer-mode to phone-mode, when a certain citizen stress level is reached.

To establish e-government harm as a research stream it is necessary to establish a kernel of scholars that believe in the necessity of this work and want to create a better world. E-government harm panels at the e-government conferences and even tracks together with special journal issues in e-government outlets would be an appropriate endeavor. E-government is multivariate and complex and the notion of coercive e-government, harm and ethics introduce new aspects that the e-government community is not fully equipped to cope with. Aspects of social science and policy on the organizational and societal levels, and sociology and psychology on the individual level – and even aspects of philosophy, may make collaboration with other research disciplines feasible – not to forget other areas of IS (HCI, PD) and public administration - to meet the challenge of performing harmless e-government. Even though scholarly knowledge is generated and disseminated through journals and conferences, it may not have a significant impact on the governments that may perform coercive e-government. Organizational collaboration on international level (IFIP 8.5, Digital Government Society etc.) or national level with governments, professional groups (public CEOs, CIOs) and interest groups (elderly, disabled, beneficiaries) may provide access to empirical settings, funding and influence, enabling new advances in e-government research.

Teaching activities is part of establishing a research field (Scholl, 2010). PhD-students should be sensitized to e-government harm in PhD courses and conference DCs to strengthen e-government harm studies in research, while e-government harm should be included in master and under graduate curricula. Students are exposed to a variety of e-services at their university, e.g. enrolment, course selection, access to course resources, library services or even access to printers. Further, they have experienced public services concerned with student grants and loans. They have experienced the feelings associated with IT systems that do not meet their needs properly in a particular (serious) situation. Hence, students might find e-government harm attractive to include in studies. In a half day lecture at Roskilde University in a design course for second semester students, I used the following approach: The presentation of e-government and the critical approach with live examples were given in the theory part. The students had to prepare for the lecture by requiring their national eID, registering in the national Digital Post solution and having sent at least one digital post to their local government asking for something in particular. Further, they should preparer 3 other e-government services that they would evaluate during exercises. During exercises, groups of 3 applying think-aloud techniques while operating various e-government services. One group discovered that a necessary Java-update would not work on a Mac. Another group reported a rat to the local government, found maps that could not be activated to mark the spot with the rat and worse, after having spent time filling out various information, the receipt revealed that if the rat was found *inside the house*, an e-mail should be sent to the local government and the service should not be used. One group found that two

girls could not register a marriage and one group found the website for retrieving your criminal record resembled a site under construction or having been hacked – the site was generated by the Police. Students were excited because they could relate to the critical e-government studies of their everyday life. How do we design critical e-government teaching activities?

6 Conclusion

My vantage point in this paper is that there is an urgent call for critical e-government research. Technology and organizations are moving fast and the e-government research community has not even started to conceptualize the core aspects of e-government harm, which implies answers to the following questions: What is the nature of e-government harm (ontology)? What are the antecedents of e-government harm? What are the immediate and long term implications on human beings? What would be the possible remedies? Do e-government scholars have a role, a responsibility, an obligation to engage with e-government harm? If this is the cause, how will we study e-government harm (epistemology)? Following the critical IS research tradition, my stance is that the e-government researcher has a personal obligation to engage in studies of e-government harm and indeed, in the endeavor to prevent it – as has the e-government research community. In this paper, I motivate critical e-government research including e-government harm, the coercive e-government that allows harm and e-government ethics.

Having accepted e-government harm as an unavoidable consequence of coercive e-government and having provided necessary remedies to prevent it, it will be possible for governments to pursue efficiency, efficacy, transformation, e-democracy etc. while at the same time not harming people or at least, being aware of incidents, where this happens to be able to reflect and adjust afterwards. The necessary measures may constitute ethical codes, regulatory mechanisms, control and prevention actions, transparency and guidance from supra-national bodies. In this endeavor, it is critical to focus on the negative impacts on the everyday practical life of public employees and citizens and to promote emancipation. Further, it will be possible to correct the long-term impact on the public sector ethos to ensure that we will have the society that we want as a conscious choice and not a society we disapprove from an unconscious and passive choice. E-government research is an applied field and acknowledging the existence and nature of e-government harm, scholars will indulge in empirical collaboration with practitioners and ensure the paramount recurring dissemination of research results that impinges on joint reflection of salient stakeholders, thus impacts policies and practical operations of e-government.

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APPENDIX

A. Elected statistics on citizens and Digital Post

Table 26 Number and percentage of citizens not opened DP, age distribution

Age group	Population ²	Exempt	Registered DP	Not opened DP ¹	% of registered DP users
Age 15-24	728.487	9.341	719.146	57.696	8,0%
Age 25-34	665.950	13.036	652.914	35.442	5,4%
Age 35-44	746.895	20.126	726.769	41.764	5,7%
Age 45-54	807.833	37.995	769.838	43.141	5,6%
Age 55-64	691.827	57.146	634.681	26.626	4,2%
Age 65-74	626.644	131.288	495.356	21.294	4,3%
Age 75-84	310.377	157.726	152.651	11.999	7,9%
Age 85+	119.027	90.805	28.222	6.283	22,3%
Total	4.697.040	517.463	4.179.577	244.245	5,8%

Note 1: September 2014 – February 2015, data from the Digitization Agency

Note 2: February 2015

Table 27 Number and percentage of citizens not opened DP, socio-demographic distribution

Socio-demographic attribute (February 2015)	Population	% of population 15+	Not opened DP	% of population 15+
Unemployed ¹	87.903	2%	-	-
Sickness benefits	398.000	8%	-	-
Institutionalized	15.000	0,3%	-	-
Cash benefits	206.040	4%	18.180	8,8%
Early retirement pension	228.765	5%	21.771	9,5%
Total	935.708	20%	-	-
Elderly (65+)	1.056.048	22%	39.576	3,7%
Non-Western migrants	334.480	7%	33.224	9,9%
Higher education	1.186.765	25%	33.802	2,8%
High school/vocational education	1.809.050	39%	77.245	4,3%
Primary school/not registered	1.698.166	36%	122.209	7,2%
Total of population, 15+	4.697.040		244.245	5,2%

Note 1: July 2014

B. Media in relation to the NDP study

Date	Title	Type	Media
22. March 2014	Every fifth letter lands in the mailbox	Interview	DR København
10. March 2014	246.000 Danes do not check their digital post	Interview	Jyllands-Posten
15. November 2014	Local government employees avoid digital post	Interview	Kristeligt Dagblad
29. October 2014	Silent protest from public employees?	Research paper	Denoffentlige.dk
24. October 2014	Agency: There will not be correct sender on digital post before 2016		Politiken
24. October 2014	Patience: Digital Post will only be fixed in 2016	Interview	Ritzau
24. October 2014	The Digital Posts from authorities have incorrect sender	Interview	Politiken
24. October 2014	The Danes receive digital post with incorrect sender	Interview	TV Nord
24. October 2014	Public Digital Post is without correct sender	Interview	DR nyhederne
28. May 2014	The Ombudsman investigates whether Digital Post violates the law - for the second time in four months	Interview	Version2
24. April 2014	Three years and five months after deadline: 23 authorities still hesitate with Digital Post	Interview	Version2
28. February 2014	The Ombudsman absolves criticized function in digital post		Version2
12. February 2014	LGDK admits: We have no clue as to whether digital post has generated a deficit		Version2
11. February 2014	More than 100 Million lost shifting to digital post		Børsen
11. February 2014	Cost reductions are overly optimistic		Morsø Folkeblad
11. February 2014	E-post is no goldmine		Nordjyske
11. February 2014	More than 100 Million lost by the mail		BT
11. February 2014	More than 100 Million lost shifting to digital post		Børsen
11. February 2014	Surprisingly little saved on digital post		Lolland-Falsters Folketidende
11. February 2014	Surprisingly little saved on digital post		DR nyhederne
10. February 2014	Digital Agency: Digital post evolves as planned		Ekstra Bladet
10. February 2014	LDGD: Digital Post is on track		Information
10. February 2014	Researchers: Local governments lost 53 million on digital post in 2013	Interview	Version2
10. February 2014	LDGD: Digital Post is on track		TVsyd.dk
7. February 2014	Digital public communication is a mess	Interview	DJØF-bladet
30. January 2014	A small change in digital post may have huge implications		Politiken
29. January 2014	The Ombudsman investigates the case about alteration of national e-mail		Politiken
20. January 2014	Authorities can alter digital letters		Politiken
19. January 2014	Authorities can alter digital letters		www.politiken.dk
30. December 2013	Corydon [Minister of Finance]: Not a legal requirement that public institutions respond to digital post		Version2
13. December 2013	Corydon [Minister of Finance] backtracks: Digital post is not relevant for all public institutions		Version2
29. November 2013	Authorities not ready for digital post	Interview	Børsen
28. November 2013	Authorities forsake digital post		Politiken
27. November 2013	Avoid digital post to the authorities - you might not get answers		Politiken
27. November 2013	The Danish Digitization Agency: Public institutions are troubled by digital post		Politiken
26. November 2013	Serious critique of digital post: Public institutions can make changes in your in-box		Version2
21. November 2013	Three years after deadline: 36 public institutions still without digital post		Version2
2. November 2013	Is it too much with the digitization?	Interview	DR P4
11. October 2013	Public institutions: Digital post - what is that?	Interview	Computerworld
2. October 2013	The State does not respond		Komputer.dk
1. October 2013	Public authorities do not respond to digital post		Berlingske
24. September 2013	Bjarne Corydon [Minister of Finance] apologizes for digital post chaos		Version2
16. September 2013	Local government not ready for digital post		DR Østjylland
13. September 2013	Investigation: The State does not answer digital post		Videnskab.dk
13. September 2013	Researcher warns against digital post		Ingeniøren

13. September 2013	Scary perspective: In the future, you will not be able to contact authorities	Interview	Den Korte Avis
12. September 2013	That's why chaos is awaiting before digital post launch	Interview	Computerworld
11. September 2013	Digital post in chaos in State administration: You don't get a response if you send digital post		Nordjyske.dk
11. September 2013	Authority: What do you mean by digital post?	Interview	Computerworld
11. September 2013	Researcher warns about Digital Post – you will never get a response	Interview	Version2
16. July 2013	Every physical mail must be argued for in Assens		www.dknyt.dk
1. July 2013	Digital post was costly for farther		Computerworld
1. July 2013	Digitization Agency about missing answer to digital post: Heavily criticized		Version2
29. June 2013	Digital silence in public sector		Politiken
28. June 2013	Local government and the State do not respond to digital post		Computerworld
28. June 2013	The state fails with a crash: No one answers digital post		Version2
16. June 2012	Nobody knows if IT investments benefit the citizens	Interview	KIT@-magasinet

C. Questions and answers in Parliament

Date	Question from Parliament	Answer from Minister of Finance
27. June 2013 – 1. July 2013, (The Danish Minister of Finance, 2013d)	Will the Minister comment on the results of Roskilde and Aalborg Universities recent survey of municipal and State digital readiness, which was mentioned in dknyt.dk June 27, 2013 under the headline: State and local governments backward with Digital Post?	As a citizen or a business, you have a legitimate expectation that the public authorities shall provide timely responses to inquiries. This shall also apply to inquiries to the authorities' digital mailbox. Therefore, it is not satisfactory results in the reported study. I will, in conjunction with state authorities initiate work to ensure timely responses. In November 2010, when digital post was established, a survey was conducted of the authorities' implementation and the result was that practically all public authorities were able to receive and respond to inquiries in Digital Post. On the basis of this, the relevant authorities have to re-create routines to ensure timely response to inquiries from citizens and businesses into authorities' digital mailbox.
12. - 20. September 2013, (The Danish Minister of Finance, 2013c)	Does the Minister find it satisfactory that only two out of ten requests for public authorities via Digital Post will be answered as documented in a study conducted by Roskilde University and Aalborg University?	No, it is certainly not satisfactory that there are public authorities not responding to messages sent via Digital Post. Citizens or businesses have a legitimate expectation that public authorities reply to inquiries within a reasonable time. Naturally, this also applies to the public institutions' digital postbox. It is basically every authority's own responsibility to ensure that they answer inquiries from citizens and companies entirety. The Digitization Agency has now intensified the follow-up and guidance of all authorities, so they can be ready to receive and answer digital post no later than 1. November, 2013
22. November – 4. December 2013, (The Danish Minister of Finance, 2013a)	Does the Minister find that it is consistent with the government's IT strategy that according to Version 2.21, November 2013, still are 36 public authorities that have not yet created Digital Postbox 3 years after the deadline, and how will the Minister ensure that the relevant authorities as soon as possible have created Digital Post?	From 1. November 1 2013, the public sector sends digital post to companies with CVR. All public authorities with CVR is, therefore, as a result of the Act on Public Digital Post required to receive digital post as a company, i.e. Digital Post from other public authorities. In addition to the legally prescribed requirements, the authorities have since 2010 been able to offer Public Digital Post as a contact channel for citizens and businesses. This possibility was launched in connection with the so-called e-Day 3 campaign. Very few citizens and companies have used this channel, which may be because they instead use self-service solutions, or prefer inquiries by phone or through regular e-mail. The Digitization Agency states that individual public institutions are delayed in their implementation of the possibility of citizen and business inquiries via Digital Post. In addition, for a number of small underlying state authorities, such as councils, boards, etc. with no or very little contact from citizens or companies, it will not necessarily be relevant, to be contactable via Digital Post.
13. – 19. December 2013, (The Danish Minister of Finance, 2013b)	Will the Minister say what the minister specifically is going to do to ensure that all State institutions meet the requirement to establish a digital postbox, and when can citizens and businesses expect that all State institutions are able to receive correspondence via a digital postbox?	As stated, all public authorities with CVR are bound to the same requirements as private companies, and all public authorities have therefore had created a digital postbox per. November 1, 2013. This implies that the authorities are ready to receive Digital Post from other authorities. There is no legal requirement that authorities' receive Digital Post from citizens and businesses. It is therefore each authority's own responsibility to assess whether they will offer Digital Post as contact channel for communications from citizens and businesses or not. The Digitization Agency has in collaboration with the responsible ministries examined the government authorities that citizens and businesses should have opportunity to contact via Digital Post. The aim is to ensure that there is transparent and clear access to use Digital Post to the authorities who have real contact with citizens and businesses. The preliminary review shows that 120 government authorities should have a citizen- and business-oriented input via Digital Post. The authorities have not yet been established for such access, are separately been informed. On the basis of the ministries feedback, a test process will be published in January 2014, and a list of the authorities which citizens and businesses can contact directly via Digital Post.

