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Governance and Online Service Delivery: The Danish Case

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Abstract. ICT enabled public sector reform and service delivery is actively researched in both classical Public Administration, Information System Management, and eGovernment literature. Multiple studies, research projects, and benchmarking efforts nonetheless highlight gaps in the current literature, not least in the eGovernment maturity models. Research points to a limited understanding of public service delivery technology as well as the role of governance, cross-governmental decision making, and cooperation when introducing ICT solutions and online services to citizens. Summarising the weaknesses, this article develops a qualitative multi-country case study methodology and applies it to Denmark. Initial findings highlight the strength of the Danish cross-governmental and consensus seeking approach to eGovernance. The article concludes with suggestions for an adapted methodology and aspects requiring further research.

Keywords. eGovernance, eGovernment, eService, inter-governmental corporation, case study, Denmark.

1. Introduction

International benchmarking research [1-3] and case studies [3-6] have long examined the introduction of information communication technology (ICT) in public administration (PA). PA literature, particularly on ICT-enabled public sector reform [7-11], information systems (IS) management research [10, 12-16], and the field of electronic government and governance - that is, eGovernment and eGovernance [17-19] - have all looked at role of governance and inter-governmental cooperation when introducing ICT solutions and online services (eService).

Several authors, however, have stressed the failure of this research to address specific issues, including blindly digitising current processes [20-22]; technology and supply [23-25]; and the outcome and impact of ICT use [9, 26, 27]. Similarly, in his 2016 review of public sector reform, IT governance, and eGovernment literature [28], Meyerhoff Nielsen found that research on the role of governance and cooperation in ensuring the successful supply and use of online eServices is not adequately addressed, and that current maturity models only address supply-side, technological, and organisational issues [25, 28].

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This articles sets out to develop a methodological framework for a multi-country case study and presents the initial findings from analysis conducted in Denmark. Following a brief outline of the background to the research and Meyerhoff Nielsen's 2016 findings (section 2), a methodological framework for a multi-country case study is developed in section 3. The initial analysis of the Danish governance model for eGovernment is presented in section 4, before the article concludes by associating the country findings to the original research questions and the appropriateness of the methodology in section 5.

2. Background

In his 2016 review of governance and cross-governmental cooperation in relation to national eGovernment strategies and online citizen services, Meyerhoff Nielsen [28] identified a number of gaps in the three strands of the academic literature. Focusing on ICT-enabled public sector reform in the PA, IS management, and eGovernment, he identified a number of shortcomings in relation to governance and outcomes including [28]:

1. The majority of models are technology- and supply-oriented without any focus on outcomes or use [29, 30]. Key exceptions include Andersen and Hendriksen's PPR model [27] and Waseda's [31], which build on existing models while seeking to address outcomes and governance issues.
2. Most models show no real understanding of core government service concepts, e.g. individual service elements (information, transaction capability, and personal data) are not separate maturity levels but elements in a given service request and subsequent delivery.
3. Front-office service provision and back-office integration are mixed in many models, e.g. one-stop shop portals should not be seen as a form of transaction, but indicate the degree to which authorities cooperate and strive for integration in providing services via portals [25].
4. No model addresses governance directly, although some like Waseda highlight management and coordination issues [31]. and cooperation is manifested in many in terms of vertical and horizontal integration, the existence of one-stop shops, and information sharing among authorities and governmental levels, even private and third-party stakeholders [32, 33].

The highlighted weaknesses are summarised in two research questions. First, does a strong governance model and high level of intergovernmental action lead to the successful supply and use of online citizen services? Second, can success factors be mapped and developed into a governance model for successfully digitising public sector service delivery and eService take-up?

3. Methodology

To answer the two research questions, an exploratory, qualitative multi-case comparative study is used [34, 35]. The case study method follows Plummer's [36] structured approach to allow for interpretation during the data analysis and its positivist epistemologies in the conceptual framework. The aim is to build a hypothesis answering

the two research questions. A framework enables with-in case process tracing and analysis to establish the governance mechanism in play in each of the selected cases.

The with-in case findings enable a cross-case comparison. The objective is to determine the correlation (i.e. the more of Y, the more X) between a strong cooperative governance model (cause) and the decision to introduce eServices (effect 1) and subsequent citizen use of this service delivery channel (effect 2). The cross-comparison will enable the author to build a hypothesis based on the findings. The unit of analysis will be the eGovernment governance model [37].

For the case selection, the site of analysis is a given country, or region, which has either considered or subsequently chosen to introduce eGovernment strategies and eServices. Based on past research and access to key stakeholders, this article focused on Denmark in the period from 2000 to 2016. Later research will contrast Denmark with other national perspectives, levels of experiences, population size, administrative systems, and complexity, for instance in countries like Canada, Colombia, Estonia, Faroe Islands, Finland, Georgia, Japan, Oman, Singapore, and South Korea.

The process tracking framework (in relation to the unit of analysis) will focus on the decision making process for the introduction of eServices (or not) and the key topics emerging in the political and public debate (during decision making, implementation and use, reference periods above).

Causalities may be:

- Governance model in place (formal and informal) including: National institutional framework and governance; decentralisation of government authority; responsible authority for eGovernment strategy, responsible authority for action plan; responsible authority for initiating and coordinating new eGovernment strategies and action plans; chairperson organisation; hosting organisation and secretariat; member organisations
- National eGovernance and cooperation model
- Process of eGovernment strategy and action plan development and approval (from idea to approval by government) including: eGovernment strategy legality; Action plan (i.e. is the strategy underpinned by an action plan? Is it legally binding?)
- Citizens' level of trust in political establishment (over time)
- Citizens' level of trust in public authorities (over time)
- Citizens' level trust in the individual service delivery channels (over time)

Several quantitative effect measurements on availability, and the use of eIDs and a basket of eServices can provide an empirical basis for the effect of a given governance model. Background indicators may serve in a similar manner. Key indicators and effect measurements are the eService solution in place (based on a basket of potential service areas in several or all case study countries) and service delivery volume and channel distribution including eService channels (over time).

Background indictors, in turn, include digital literacy; Internet access (%-of population, income, and educational level segments) and use (ibid.); eBanking (ibid.); eCommerce (ibid.); and eService use (ibid.).

The key primary sources include semi-structured stakeholder interviews including organisations responsible for electoral governance bodies; authorities responsible for eGovernment strategy and IT use; political decision makers; and other stakeholders.

Effect measurement and background indicators within the chosen cases will be national and international statistical services (e.g. EuroStat, ITU, OECD, UNDESA), as well as relevant academic and international references (e.g. EU, OECD, OSCE, UN). Where data cannot be identified, the author may revert to estimations based on past analysis.

The country study will guide the author when attempting to address governance and the use of eServices in eGovernment stage model discourse started by Meyerhoff Nielsen's literature review [28].

4. Findings

Countries offer different perspectives and levels of experience when it comes to eGovernment and online service provision for citizens. Income levels, population size, administrative systems, and complexity varies, so it is therefore important to put things in context.

4.1. Socio-economic background

Socio-economically, Denmark is a small (population 5,581,503, territory 43,094 km2); high-income (estimated GDP €260.74 billion and GDP per capita € 46,715 in 2015) nation state; with an open-expert lead economy with low GDP and productivity growth (estimated GDP growth 1.6%, imports €75.12 billion, exports € 84.32 billion); and an ageing population [38].

4.2. ICT use in public administration

ICT has long been used in Danish public administrations. As a strategic plan to maximise the ability of management to achieve a set of organisational objectives [11], Danish eGovernment strategies have followed a trajectory similar to most countries around the world. While the focus has shifted from defining and implementing relevant standards, infrastructure, and services to benefit realisation (Table 1), the key objectives of the Danish eGovernment strategies have been to make Denmark a leading information and knowledge society, and to increase efficiency and productivity while preserving the welfare-state model and associated values [39, 40].

The Danish eGovernment policies have evolved over time (Table 1). Since 2011, two focus areas are of particular interest: cost-savings and benefit realisation through mandatory self-service and the business case model, plus the strengthened cross-governmental cooperation and management in IT projects – not least to ensure data exchange, a high degree of interoperability [41].

The 5th eGovernment Strategy for 2016-2020 (published 12 May 2016) builds on previous strategies. The focus is on public sector productivity and efficiency, user-friendliness, and security. More specifically, the effectiveness and value added of eServices are highlighted, as is private sector growth through public sector digitization and administrative burden reduction. Themes includes: automation of public administrative procedures; improved usability; welfare and primary care; data sharing and reuse (incl. once only principle); a more coherent eGovernment framework (i.e. less silos); maintaining and improving the IT infrastructure; privacy and data protection (incl.

cyber security); and improving the management of IT projects and common public programmes and efforts (incl. minimizing risk of failed IT projects, joint development and use of common infrastructure, components and data) [42, 43].

Table 1. eGovernment in Denmark from 2000-2020 [40-42]

2001-2003: Digital collaboration	Allowing citizens to send e-mail to the public sector and authorities to adopt digital channels of communication. Examples: Digital signatures.
2004-2006: Internal digitalisation and efficient payments	Focus on secure e-mail between authorities, joint government standards, and portals. Examples: eFaktura (eInvoice), NemKonto (single bank account for government use), Virk.dk (business portal), Sundhed.dk (health portal), and digital document and archive systems.
2007-2010: Shared infrastructure and one point of access	Mandatory use of shared infrastructure; components and standards; increased cooperation; value added services; and efficiency. Examples: Borger.dk (the citizen portal), NemID (digital signature), NemLog-in (single, sign-on), eIndkomst (electronic income registry), Digital Post, NemSMS (SMS service component), and business case model.
2011-2015: The path to future welfare	Focus on benefit realisation; mandatory use of Digital Post and selected eServices; reuse of data; increased cooperation. Examples: Data distribution, investment in IT and digital teaching aids, tested welfare technology, digital literacy, and campaigns.
2016-2020: A stronger and more secure digital society	Focus on better, more coherent, user-friendly online services, ICT led growth and efficiency, security, cross-government cooperation, and benefit realization. Examples: User-journeys for e.g. moving, business reporting and company registration, administrative burden reduction, once-only-principle, data driven growth, SMART cities, legal framework, security, cloud computing, ICT support and joint service center for portals and joint-government components like NemID, Digital Post, etc.

4.3. Internet access and use

Access to, and the skills to use, the Internet are prerequisites for successful eGovernment and particularly the use of the provided eServices. Denmark, like the majority of countries, had an initial focus on ensuring the interconnection of government authorities, their systems, and the rollout of Internet broadband to citizens and businesses.

Denmark has successfully facilitated access to the Internet with 93% of households choosing to buy broadband Internet access, mobile phone penetration at 125.89%, with 42.34% have broadband subscriptions in 2014 [47]. OECD figures show that the 2014 price range for broadband connection is relatively low (US$ 22.24-62.68 adjusted to purchasing price parity) compared to income levels [44-46].

Similarly, government policies have facilitated the development of a digitally literate population and society, with the number of individual using the Internet increasing from 39.17% in 2000 to 95.99% in 2014 [47].

4.4. Key enablers, citizen eServices, use and impact

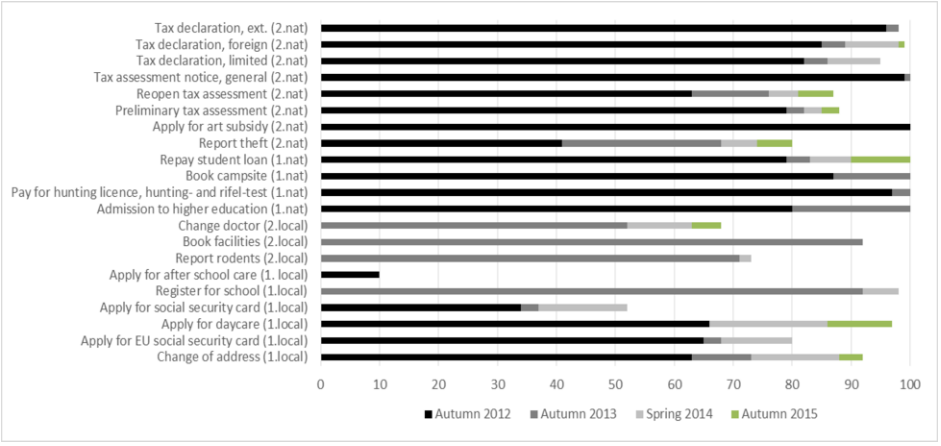
With an IT literate population and the Internet infrastructure in place, what does actual use and value added of online service look like? Looking at the proportion of citizens who use of online banking (eBanking) or shop online (eCcommerce) and their level of interaction with public authorities online (Table 2), the Danish context shows a clear discrepancy between the use of private and public sector transactional services online in 2010. By 2015, this discrepancy has decreased by four percentage points.

Table 2. Citizens use of eBanking, eCommerce, and interaction with public authorities online 2000-2015 (at least once per year), selected years [48]

	2010	2015
Online banking	71%	85%
Online commerce	68%	79%
Interacted with government online	78%	88%
Obtained information from a government website	76%	86%
Submitted a complete form (eService)	51%	69%

Looking closer, data show that the number of active eIDs and digital signatures increased from 79.1% to 89.2% in the period 2012-2015 – and with 390.35 million logins in 2015, use is very high. Similarly, 89.2% of Danes have a digital postbox – with 10.6 million logins, 88,863,683 messages sent, and 819,936 received in 2015.

Online service use as a percentage of overall service delivery volume – referred to as the degree of digitisation in Denmark - for selected areas has also increased in the period. In fact, the introduction of the "mandatory" digital communication and eService use (Figure 1) have lead to dramatic changes in user behaviour with high volume, high-frequency service areas experiencing degrees of digitization well above the 80% mark.



Key: 1 = first wave of mandatory service areas 1 December 2012. 2 = second wave made mandatory 1 December 2013. Nat = services areas for which national authorities are responsible, Local = services areas for which municipalities are responsible. NB: Wave 3 and 4 not included.

Figure 1. Growth rates since the introduction of "mandatory eServices use", 2012-2015 (selected services) [49]

4.5. Governance models and institutional frameworks in place

Intergovernmental cooperation, management, and governance of eGovernment policies and initiatives are prioritised differently around the world, and with different results. In Denmark, a centralized institutional framework and governance model is in place. Three levels of government exist here: national, regional (5 regions) and local government (98 municipalities). Government authority is nonetheless decentralized with a large degree of local autonomy and decision-making including tax and budget spending. Approximately 70-80% of citizen services are provided by municipalities, although a degree of central control is enacted via the annual budget negotiations between the Ministry of Finance and ministries, regions and municipality stakeholders [50, 51].

The Danish Agency for Digitisation (DIGST), the specialized ICT agency under the auspices of the Ministry of Finance, is responsible for daily coordination and overall responsibility for past, current, and future eGovernment strategies and action plans. This includes a mandate to initiate and ensure benefit realisation and compliance. The current framework was introduced following the 2012 merger of the key government players including the Digital Taskforce (established in 2005) and hosted by the Ministry of Finance, the Agency for Governmental Management, and the eGovernment related standards, infrastructure, and platforms from the National IT- and Telecom Agency. The aim was to improve the efficiency and effectiveness of the governance model [39-41]. Table 3 summaries the Danish governance of eGovernment strategies and action plans.

Table 3. eGovernment governance and cooperation models [39, 50-52]

Responsible authority for eGovernment strategy	Ministry of Finance (MoF), Danish Agency for Digitisation (DIGST) including steering committee for Joint Cross-Government Cooperation (STS) and steering committee for the eGovernment Strategy.
Responsible authority for action plan	DIGST.
Responsible authority for initiating and coordinating new eGov strategies and action plans	DIGST.
Chairperson organisation	DIGST on behalf of MoF.
Hosting organisation and secretariat	DIGST.
Member organisations	Representatives from MoF (i.e. DIGST), key ministries like economy, taxation, justice, science, health and interior, Danish Regions (DR) and Local Government Denmark (LGDK).
National eGovernance and cooperation model	Centralised with mixed features, i.e. process driven by DIGST but representatives from all levels of government, initiatives from all stakeholders, consultative and consensus based with a strong mandate.
Process of eGovernment strategy and action plan development and approval (from idea to approval by government)	Centralised process coordinated by DIGST but consultation with all relevant stakeholders incl. key ministries, DR and LGDK, private and civic interest groups.
eGovernment strategy legality	Yes, part of the government programme.

Action plan (i.e. is the strategy underpinned by an action plan)	Yes.
Action plan legally binding	Yes, is part of the government programme and annual budget negotiations between all levels of government.

Decisions are generally made in the Steering Committee for the eGovernment strategy. The steering committee meets 10-12 times annually, is chaired by DIGST, and consists of representatives (generally directors and key unit heads) from key ministries plus Danish Regions (DR) and the Local Governments of Denmark (LGDK) (Figure 2) [39, 41].

The strategy, action plan (including individual programmes and projects), budgets, and final reports must be approved by the Joint Committee for Cross Government Cooperation (STS). The STS is chaired by the Ministry of Finance. It meets approximately four times a year and consist of permanent secretaries sitting in the cabinet committees for coordination and the economic affairs as well as the management committees of DR and LGDK. The STS members thus represent the advice of the individual ministers in the cabinet before The Ministry of Finance (on behalf of the government) presents an eGovernment strategy for parliamentary approval. For national strategies and reform programmes, there is a tradition to have broad parliamentary support including from opposition to ensure continuity in the strategic direction of the country [39, 41].

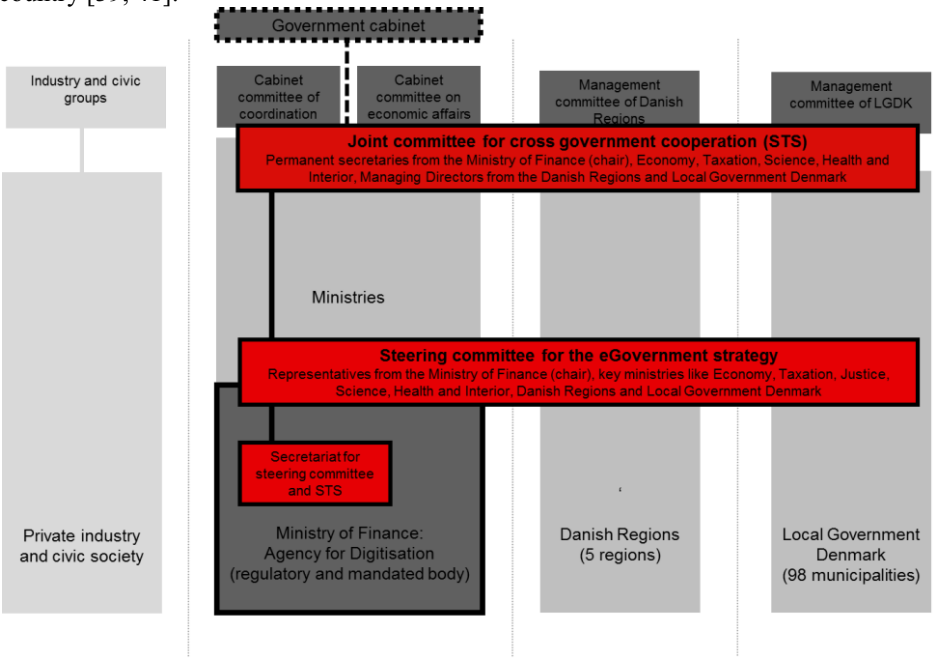


Figure 2. eGovernment governance and coordination model in Denmark.

5. Observations and conclusions

The Danish case highlights that a strong governance model and high level of intergovernmental action has not only lead to the successful supply of government services online, but has, since 2012, lead to a high level of citizen eService use. Early eGovernment strategies have ensured that Internet access, the cost of broadband access, and digital literacy are no longer barriers to the successful introduction and subsequent adoption by citizens.

The Danish cross-governmental model revolves around the STS and joint-steering committees in DIGST and Ministry of Finance. STS creates horizontal connections across the central government agencies as well as vertical connections among the central government, regions, and municipalities. The joint national strategies and action plans ensure that all levels of government move in a coordinated and common direction. The joint initiatives and cooperation between public authorities at all levels of government creates the join standards, launches the key enabling infrastructure, and gives citizens and businesses a sense of government institutions speaking with a "single voice" to provide recognizable and user-friendly online solutions.

The Danish model has continuously proven its worth, not only in providing the strategic direction, but also in delivering real and measurable results of digitization. While public-private cooperation and projects exist, notably the digital postbox, eID, and eSignature, there could be civil society and private sector representation in the joint-steering committee to ensure that public sector cost savings also benefit citizens and businesses e.g. through administrative burden reduction and user-centric and proactive service delivery.

It will require further analysis to determine whether the Danish success factors can be mapped and developed into a governance model for successfully digitising public sector service delivery and eService adoption. First, a validation of the Danish findings through a number of stakeholder interviews will be carried out. Second, the experiences of a selected number of national eGovernment models will be identified, analysed, and contracted to the Danish to identify the key factors affecting their respective successes and failures.

For future research, there is a need qualify the methodology further. As the individual countries have followed different trajectories and timelines, it may be required to contextualize the timeline of each case in distinct periods, e.g. decision making period (i.e. period during which public and political debate took place before deciding on the potential introduction of eGovernment strategies and eServices), development period (i.e. period of development), introduction period (i.e. introduction and roll-out of eServices), and normal period (i.e. eServices now a given option and focus on benefit realisation).

The initial Danish findings highlight the importance of process tracing to establish the actual mechanisms behind the individual cases of specific governance and cooperation models, as well as their respective strengths and weaknesses.

The availability and quality of background and quantitative effect indictors has proved to be lacking, of varied quality, and with variation in definitions. Flexibility in data collection and data analysis is therefore required and the methodology will thus be adapted in line with Van Maanen [53] and Glaser and Strauss [54] – particularly in relation to the lack of background and effect measurement data.

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