

# **Public Values and Decision Making in the Swedish e-Government Context**

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Thesis for Licentiate degree in Computer and System Sciences

Mid Sweden University

Sundsvall, 2017

Akademisk avhandling som med tillstånd av Mittuniversitetet i Sundsvall framläggs till offentlig granskning för avläggande av filosofie licentiatexamen måndag, 22 maj, kl. 13.00, C310, Mittuniversitetet Sundsvall. Seminariet kommer att hållas på engelska.

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Printed by Mid Sweden University, Sundsvall

ISSN: 1652-8948

ISBN: 978-91-88527-14-1

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Mid Sweden University Licentiate Thesis 130

*To my late grandfather, Tore.*



# Acknowledgements

Research is a lonely process which you carry with you at all times, yet you meet a lot of interesting people on the way. This section of the thesis is devoted to some of the people I have met on my journey.

First of all, I wish to thank my supervisors Katarina L. Gidlund and Aron Larsson for giving me this opportunity and for giving me a kick in the right direction every now and then. In addition to guiding me in the research process you have showed me how important it is to work with people that believe in you.

It is a pleasure to be a member of the Information Systems research group at Mid Sweden University, which includes but is not limited to, some of my current and former PhD-student colleagues: Ann-Sofie, Elisabeth, Erica, Karin, Klas, Martina, Nathan (now PhD), and my officemate Christine. Our Post Doc, Mikko, always brings positive energy with him. I also want to mention the members of the department of Information Systems and Technology.

My mentor Olof Nilsson has been a great support, and even more important, a good friend. Speaking of friends, I wish to thank my sister Malin and my brother in law Lars for all the long days and late nights we played board games together. Malin has also contributed with feedback on my work and I wish her good luck with pursuing her PhD.

I am grateful that Gustav Lidén reviewed and gave me feedback on my thesis at the pre-seminar. I would also like to thank Erik Borglund for reading my draft and providing useful comments.

I have been fortunate to cross paths with e-Government researchers from Agder University in Norway several times during this period. It has been a pleasure every time.

Without the participation of informants and respondents, this thesis would not exist – thank you for taking your time to contribute to this work.

Furthermore, I also want to thank a former public manager named Carl-Gerhard Lindberg who introduced me to the opportunities as well as the uncertainties within the public sector.

Last, but not least, I would like to thank a very special girl. Thank you for being you, Nina!

I can only hope that I have been able to give back at least some of the kindness the people mentioned above have shown me.

Leif Sundberg, Sundsvall, April 2017.

# Table of contents

<b>Abstract</b> .....	<b>vi</b>
<b>Summary in Swedish</b> .....	<b>vii</b>
<b>List of papers</b> .....	<b>viii</b>
<b>1 Introduction</b> .....	<b>1</b>
1.1 Motivation .....	4
1.2 Purpose and research questions.....	5
<b>2 Theory</b> .....	<b>7</b>
2.1 What is e-Government?.....	7
2.2 Value-focused decision making.....	8
2.2.1 Values and objectives.....	9
2.2.2 Decision making.....	10
2.2.3 Stakeholder inclusion.....	11
2.2.4 Weighting and resource allocation.....	12
2.2.5 Outcomes assessment .....	12
2.2.6 Risk and uncertainty .....	13
<b>3 Methodology</b> .....	<b>16</b>
3.1 Epistemological considerations .....	16
3.1.1 Philosophical foundations .....	16
3.1.2 Subjective versus objective risk.....	17
3.1.3 Towards a pragmatic standpoint.....	17
3.2 Research design.....	19
3.2.1 Ethical considerations .....	20
3.2.2 Paper I .....	21
3.2.3 Paper II .....	22
3.2.4 Paper III .....	23
3.2.5 Paper IV .....	23
<b>4 Results and discussion</b> .....	<b>24</b>
4.1 Values and objectives.....	25

4.2 Decision making .....	26
4.3 Weighting and resource allocation .....	27
4.4 Outcomes assessment .....	28
4.5 Risk and uncertainty .....	29
<b>5 Conclusions .....</b>	<b>31</b>
5.1 Further research .....	32
<b>References .....</b>	<b>33</b>

# Abstract

This thesis addresses topics of public values and decision making in relation to the use of technology in the public sector. The research is conducted in the Swedish government context. A range of values that is specific to the public sector has been defined and classified in prior research. These public values can be defined as normative agreements of how a government should act. The Swedish government spends SEK 46.5 billion on information technology every year. Some of these funds are invested in improvements that are intended to increase efficiency and openness, as well as to make it easier for citizens to use government services. Such ambitions are studied in the e-Government research field. The literature suggests that reasons to question the promised values of implementing technology in the public sector exist and that many initiatives ultimately fail. The public sector has some unique features that may increase complexity, such as the variety of stakeholders and multitude of organizations that are both involved in the development process and affected by the outcomes. The purpose of this thesis is to explore public values and decision making in the Swedish e-Government context by posing three research questions. 1: How can public values be utilized in decision making? 2: Under what conditions are decisions made in the studied context? 3: How can value-based decision making be adopted by e-Government practice? The thesis is based on quantitative and qualitative data gathered from case studies and a survey. Its theoretical contribution is a comparison of theoretical concepts from decision theory and public values, which are then applied to e-Government. Several fragmented concepts from e-Government can be tied together under decision theory. The study's results show that many decisions are taken under a great deal of uncertainty due to the absence of formal support mechanisms. The Swedish public administration leans toward a variety of project models in its work with e-Government, and these models constitute the arena in which decisions are made and risk analysis is performed. However, many risks as well as opportunities reside beyond the studied projects' control. Holistic stakeholder inclusion and risk analysis are suggested as practices beneficial for increasing value and reducing uncertainty. The thesis concludes by suggesting that further research should continue to apply concepts from decision theory on e-Government. This includes revealing the motivations and values behind digitalization of the public sector.

## Summary in Swedish

Svenska myndigheter spenderar runt 46,5 miljarder kronor på informationsteknologi varje år. En del av dessa medel går till e-förvaltning (även kallat digitalisering), med ett uttalat syfte att förenkla för medborgarna och skapa en öppnare och mer effektiv förvaltning. Den här avhandlingen behandlar värden och beslutsfattande inom svensk e-förvaltning. En utgångspunkt är att det finns ett antal värden som är specifika offentlig sektor (public values). Dessa värden bygger på normativa överenskommelser om hur offentlig sektor bör arbeta och de kan även ses som de yttersta målen för beslutsfattande. Tidigare forskning visar att implementering av informationssystem är associerat med höga risker. Offentlig sektor har egenskaper som gör att dessa risker intensifieras; många intressenter och organisationer som är inblandade i och påverkas av utvecklingen. Syftet med den här avhandlingen är att utforska värden och beslutsfattande i svensk e-förvaltning. Tre forskningsfrågor har formulerats: 1. Hur kan public values användas i beslutsfattande? 2. Under vilka förutsättningar sker beslutsfattande i den studerade kontexten? 3. Hur kan värdefokuserat beslutsfattande omsättas i praktiken? I avhandlingen används kvalitativa och kvantitativa data som genererats via fallstudier, intervjuer och en enkät. Avhandlingens teoretiska bidrag är en sammanslagning mellan beslutsteori och värdeteori, som sedan appliceras på e-förvaltning. Flera fragmenterade koncept inom e-förvaltning kan knytas samman under beslutsteori. Resultaten visar att beslutsfattande i kontexten sker under stor osäkerhet eftersom formella supportmekanismer saknas. Förvaltningen använder sig av projektmodeller som konstituerar arenan för riskanalys och beslutsfattande. Risk och osäkerhet sträcker sig dock bortom artificiella gränser som projekt och regioner. Omfattande inkludering av intressenter och noggranna riskanalyser föreslås som gynnsamma aktiviteter för att identifiera möjligheter och minska osäkerhet. Avhandlingen avslutas genom att föreslå att framtida forskning bör fortsätta applicera koncept från beslutsteori på e-förvaltning. Detta inkluderar att utforska motiven bakom digitalisering av offentlig sektor.

# List of papers

## Paper I:

Sundberg, L. (2016). Risk and Decision in Collaborative e-Government: An Objectives-Oriented Approach. *Electronic Journal of e-Government*, 14(1), 36-47.

## Paper II:

Sundberg, L. (2016). Decision Making and Value Realization in Multi-Actor e-Government Contexts. 15th IFIP Electronic Government and the 8th Electronic Participation Conference (EGOV ePart 2016), 23, 147-154. Guimarães, Portugal: IOS Press.

## Paper III:

Sundberg, L. and Larsson, A. (2017). The Impact of Formal Decision Processes on e-Government Projects. (Forthcoming).

## Paper IV:

Sundberg, L. and Gidlund, K.L. (2017). Value Focused Decision Making: Decision Theory Meets e-Government. Accepted for publication in the 16th IFIP Electronic Government and the 9th Electronic Participation Conference (EGOV ePart 2017), St. Petersburg, Russia: Springer.

# 1 Introduction

This thesis addresses topics of public values and decision making in relation to the use of technology in the public sector. The research is conducted in the Swedish government context.

The aim of managerial work in the private sector is to make money for the firm: profit is the ultimate value, and it can be assessed by using monetary measurements. In the public sector, the manager's aim is less clear. The objectives are diverse and measurements of values more difficult to assess. Furthermore, the public manager needs to prioritize the allocation of limited resources that have value in their alternative uses. In the private sector, the individual can refrain from consuming a product which value is perceived as limited. In the public sector, the government is using its coercive power of taxation to produce services that may be mandatory for the individual (Moore, 1995).

A range of values that is specific to the public sector has been defined and classified in prior research. Although the exact definition of what constitutes these values vary (Van Der Wal and Van Hout, 2009), some attempts to define them can be found in the literature. According to Bozeman (2009), public values can be described as normative consensus about rights, obligations and principles between the citizen and the government. Bannister and Connolly (2014) define public values as modes of behavior that are held to be right. Public values have been classified in different ways in the literature. Rutgers (2008) argue that many classifications lack a grounding in prior theory. Rose et al. (2015:2) present a classification based on different paradigms that describe how the public sector should work. These authors differentiate between:

- Professionalism values (e.g. acting according to laws and regulations)
- Administrative efficiency values (e.g. cost savings, performance)
- Service improvement values (e.g. used-needs based approaches)
- Citizen empowerment values (e.g. including citizens in development processes)

According to Keeney (1992, 1996), values are fundamental to everything we do and should be the driving force for decision making. The underlying goal of the decision analysis field is to contribute to rational decision making and thus to increase the likelihood that the outcomes will fulfill objectives and be in accordance with the decision maker's desires and values. Decision

problems within and across organizations can be complex, as humans are often driven by a large spectrum of values (Webler et al., 2001). Government decision making occurs in an environment in which rationality is contested by political, organizational and stakeholder diversity. Unlike in the private sector (where profit is the ultimate objective), in the public sector managers need to display skills in balancing a number of competing objectives in a transparent way (Halachmi and Greiling, 2013). Whereas private sector managers are accountable to shareholders, public managers need to explain their motives for making decisions about the use of a nation's fiscal funds.

For two decades, the use of internet-based information and communication technology (ICT) in the public sector has caught the attention of scholars from different research fields. This activity is also known as electronic government, hereinafter e-Government. One example of an outcome of e-Government is e-services, such as electronic tax declaration. The empirical material in this thesis is based on data from the Swedish e-Government. The Swedish state was organized into a central administration and series of local counties in 1634. Today Sweden has a tradition of independent government entities comprising the public administration, including:

- ~240 national government agencies
- 20 county councils
- 290 municipalities

Lind et al. (2009) describe how Sweden had a rapid up-take of information technology for administrative purposes during the second half of the 20<sup>th</sup> century. One beneficial circumstance was that all citizens and companies are given unique registration numbers. A computerized register with these numbers was established in the 1960's. The registry allowed agency case handling to be computerized which led to the establishment of large national databases. In the late 1990's, the "Home-PC reform" made it possible for employees to receive tax deduction when purchasing PCs. This reform led to Sweden being a world leader in PC penetration as well as increased awareness and expectations of the possibilities to access services via the internet.

With the Internet, government officials identified opportunities of increased and more efficient delivery of public services under the notion of the "24-hour government". (Regeringen, 2000). The overall responsibility for e-Government in Sweden has shifted between ministries. At the same time, several agencies with a counseling role have been established and then shut down (e.g. Verva, E-delegationen, Digitaliseringskommissionen). In relation

to regional governments, the Swedish Association of Local Authorities and Regions represents the municipalities and county councils and offers them support and services. Weak central regulation and autonomous government bodies can lead to rivalries and a government working in “stovepipes” instead of toward shared objectives (see e.g. Grönlund, 2009; Grönlund and Lindblad-Gidlund, 2010; Ilshammar et al., 2005). In a 2004 report, The National Audit Office concluded that e-Government have had a limited impact in Sweden (Riksrevisionen, 2004).

A strategic document from the central government (Regeringskansliet, 2012), entitled "With the citizen in the centre" outlines three objectives for Swedish e-Government, namely:

- An easier everyday life for the citizens
- An open government administration that supports innovation and participation
- Higher quality and more efficient government services

The document is essentially an extension of earlier strategies, which also mentions objectives in the form of ease-of-use, openness and efficiency (Regeringskansliet 2000, 2008). In addition, the government also mentions a different sort of objective under the notion of “Digital first”: Sweden will reclaim its position as a leading e-Government nation (Regeringen, 2016).

In e-Government benchmarks conducted by United Nations (2016) and the European Commission (2016), Sweden is among the top performing countries, but has lost positions compared to other nations. Such benchmarks have been criticized for putting too much emphasis on service uptake (Snijkers et al., 2007) as well as for not reflecting a nation’s economic and political climate (Bershadskaya et al., 2012).

The Swedish government has created initiatives to evaluate the efficiency of the digitalization of the country’s public sector (Ekonomistyrningsverket, 2014, 2015). The total costs for information technology (IT) within the government are estimated at SEK 46.5 billion per year (E-delegationen, 2012). In the national agencies, IT is the third highest cost after employees and facilities. A report from the Swedish National Audit Office (Riksrevisionen, 2016) concludes that:

- Government agencies are not aligned with the objectives of central government
- Central government has not created the proper institutional conditions needed for government agencies to reach their goals

- Much untapped potential exists in relation to current services for digital messaging, e-archives and open data
- Governance of Swedish e-Government is characterized as short term, delegated and without holistic responsibility, which has led to low cost efficiency

## 1.1 Motivation

Although the use of ICTs in the public sector often comes with promises of increased benefits, a large stream of scientific literature on the subject provides reasons to doubt these expectations. Numerous cases present scenarios in which such initiatives reportedly failed to deliver the promised benefits (Heeks, 2006). In the public sector, these failures lead to a loss of tax money and public trust. The risks associated with large systems have been known since long before the rise of e-Government. In the information systems (IS) field, the risks that accompany introducing new technology in complex organizational settings have been known for a long time. In a 1987 paper, the IS failures of two decades are described as “legendary” (Lyytinen and Hirschheim, 1987). Willcocks and Griffiths (1994) argue that risk analysis in large-scale IT-initiatives is a critical but often undermanaged activity. Heeks (2003, 2006) distinguishes between total failure, in which an e-Government initiative is abandoned or never implemented, and partial failure, in which an initiative’s major goals are not achieved and undesirable outcomes arise. In contrast, success can be defined as when most stakeholders attain their goals and no significant undesirable outcomes are experienced.

The public sector has some characteristics that scale complexity up, including organizational diversity; its large potential user-base also means that some services (e.g. tax declaration and parental allowances) may have a vast part of a country’s population as their target group. As e-Government advances into more mature stages (Layne and Lee, 2001), complexity increases. From just being present online, diverse government agencies are working toward integrating their systems and services. An IS with multiple components of soft- and hardware makes it difficult for one or a small group of decision makers to have complete knowledge of the system (Denker, 2007). Large systems are also resource demanding, which makes them sensitive to cost overruns and organizational flaws. At the same time, these kinds of systems have a high potential value for society as they offer critical services to a large number of users (National Research Council, 2000). Savoldelli et al. (2014) identify a paradox between high levels of investment in e-Government

and low service adoption by citizens, with institutional and political factors being the most severe barriers. Furthermore, these authors claim that the paradox is caused by unstructured and untrustworthy decision processes. Budzier and Flyvbjerg (2012) study high-impact e-Government initiatives with trajectories that might be difficult to predict. They suggest that public organizations should establish efficient internal decision-making systems to enable the early detection of anomalies. Ekenberg et al. (2009) argue that government authorities should use available decision support methods in a transparent manner to avoid having the public “guess” the data, values and priorities on which a public decision is based. Ekenberg (2015) also concludes that public decision making is in a highly doubtful state; although new means for structured participatory processes have emerged, government entities seldom use them in formal public decision-making processes. Pardo and Burke (2008) argue that seeing as unstructured and non-transparent decision processes hinder the realization of public values and citizen trust, (government) “leaders must understand the link between their policy decisions and the capability of governments to create the systems necessary to share information and other resources across boundaries”. In e-Government, the success of a policy or an application often depends on the ability of multiple organizations to collaborate toward shared objectives (Dawes and Pardo, 2002).

## 1.2 Purpose and research questions

The purpose of this thesis is to explore public values and decision making in the Swedish e-Government context. Three research questions (RQ) are posed.

The first RQ aims at developing theory by comparing concepts from public values and decision making, and relate them to the e-Government research field:

**RQ1:** How can public values be utilized in decision making?

The second RQ contributes with description and understanding of the studied context:

**RQ2:** Under what conditions are decisions made in the studied context?

Finally, the third RQ aims at presenting suggestions that may improve practice, based on the results of RQ1 and RQ2:

**RQ3:** How can value-based decision making be adopted by e-Government practice?

In section 2, theories of public values and decision making are applied to e-Government. Thereafter section 3 addresses methodological considerations, including the research design and basis for selecting the empirical data. In section 4, the results from the papers are synthesized and discussed. Conclusions are then presented in section 5, together with suggestions for future research.

## 2 Theory

This section starts with a description of the e-Government research field. Thereafter theories of public values and decision making are presented.

### 2.1 What is e-Government?

While no universal accepted definition of e-Government exists (Yildiz, 2007) as noted previously, e-Government, can be defined as the use of ICTs in the public sector to create better government (OECD, 2003). A related concept is e-Governance. According to UNESCO, e-Governance is a wider term than e-Government as it also entails a focus on policy making and new ways of leadership (United Nations, 2005, see also Grönlund and Horan, 2005). In this thesis e-Government is used as a broad term that includes internet-based technology use in the public sector as well as ideas of transformational government. As a research field, e-Government is characterized by being explored by multiple disciplines using a variety of theories and methods. It stems from disciplines such as IS and public management. e-Government has sometimes been accused of being theoretically weak and producing research that lacks practical implications. Concerns about conceptual and definitional vagueness can also be found in the literature (Heeks and Bailur, 2007; Yildiz, 2007). However, some scholars have a more optimistic view; for instance, Bannister and Connolly (2015) argue that a great deal of valuable theory exists in conjunction with e-Government. A multi-disciplinary field might not be suited for a grand theory, but it can indeed capitalize on advantages offered by different research streams.

E-Government often comes with promises of increased benefits and hopes that the use of ICTs will transform the way governments work. Some scholars describe the e-Government era as a new paradigm (Bryson et al., 2014), while others scholars warn for researchers falling for a technological “hype” associated with the promised benefits of new technology (Yildiz, 2007). Different paradigms in the public sector have replaced and advanced the roles of citizens, policy makers and the government administration. The expected public value outputs also differs between paradigms. In traditional, Weberian government, rules, due process and neutrality are the core values that should determine how the public sector acts (Andersen et al., 2012). Weberian bureaucracy dominated much of the 20<sup>th</sup> century, but was questioned after the economic (oil) crisis of the 1970s. In the 1980s a new paradigm that is closely connected to the market economy appeared: new public management (NPM)

(Bryson et al., 2014). According to NPM, Weberian bureaucracy had failed to answer to customer needs which led to underperformance and poor legitimacy (Persson and Goldkuhl, 2010). The dominating core value in NPM is efficiency. The citizen is seen as a customer whose demands can be satisfied by proper government supply (Bryson et al., 2014). Prior ideals in the public sector suggested that accountability could be increased and corruption could be reduced by separating the private and public sectors. In NPM, the distinction between the two sectors is removed and accountability is achieved through obtaining results. Furthermore, the ideal organizational structures are small, competing units, inspired by private sector corporations. New public management is traditionally associated with the new right wing movements in Ronald Reagan's United States and Margaret Thatcher's United Kingdom. However, Hood (1995) points out that Sweden, which was dominated by left-wing politics during the 1980s, put a large amount of emphasis on NPM. Persson and Goldkuhl (2010) argue that the values in e-Government are a merging of values from Weberian bureaucracy and NPM. According to Bryson et al. (2014), another paradigm shift has taken place since the millennia shift. A full range of democratic and institutional values is now relevant. In order to achieve these values, government agencies should collaborate with each other, and include citizens in their processes. New public management fragmented many government functions, and was accused of using striving towards a reduced set of values (Persson and Goldkuhl, 2010). In the new paradigm that has subsequently emerged, agencies are supposed to work together as a cohesive government to create seamless solutions independent of and across agencies (Bryson et al., 2014). The resulting services should be based on life-event of citizens, rather than on agency areas of responsibility. Dunleavy et al. (2005) use the term "digital-era governance" to describe the paradigm shift. They identify three characteristic themes: reintegration (as opposed to fragmentation), needs-based holism (i.e. reorganization to create seamless, non-stop solutions) and digitization processes (electronic service delivery). However, as mentioned in the introduction, many uncertainties and alternate possibilities may be ascribed to the outcomes of these changes.

## 2.2 Value-focused decision making

Humans make a number of decisions every day. The science of decision theory aims to understand the reasoning behind an agent's choices, as well as to improve decision making. Descriptive decision theory is concerned with how people make decisions, whereas prescriptive decision theory is dedicated

to providing assistance to enable better decision making (Keeney, 1992:1). In the remaining sub-sections, concepts from decision theory are discussed in relation to public values and e-Government, namely values and objectives, decision making, weighting and resource allocation, stakeholder inclusion, assessment, and risk/uncertainty. The concepts have been selected based on a decision making situation (which can be structured using a formal decision method, such as Multi-criteria analysis, see e.g. Department for Communities and Local Government, 2009; Gamper and Turcanu, 2007). The following scenario can represent such a situation:

A family is thinking about buying a flat in a city. The **objective** is to find a place suitable for combining family life with work. If one would further investigate the family's motives, the flat would probably be a means of something else, such as ideas of what constitutes a good life or similar, depending on the **values** of the family members. Two conflicting criteria are considered; access to green areas and short commuting distance to work. These criteria need to be **weighted** towards each other unless they are equally important. Limited financial **resources** need to be taken in account when making the decision. **Uncertainties** regarding issues such as job status and interest rates need to be considered. Furthermore, depending on the size and structure of the family, the involved **stakeholders** probably want to express their desires regarding the decision. Finally, the decision must be **assessed** somehow.

The above situation involves several difficulties. For example, how will the family identify, predict and manage relevant uncertainties? How are the desires of relevant (current and future) family members accounted for? And how will the outcomes be evaluated? While commuting might be easy to measure in time/distance, access to green areas might be more difficult to assess.

### **2.2.1 Values and objectives**

Every decision-making situation is dependent on a set of context-specific objectives (Eisenführ et al., 2010). According to Keeney (1992, 1996), values should be the fundamental driving force for decision making. Based on the high failure rate of e-Government initiatives, Flak et al. (2009) propose that researchers should utilize a structured approach to benefits realization, combined with a focus on (public) value. Cordella and Bonina (2012) argue that a public value perspective offers a rich context suitable for studying public sector reform. Rose et al. (2015:2) argue that public sector IT initiatives with multiple stakeholder groups may benefit from working with values in

during design and evaluation. Furthermore, these authors claim that studying value might help to expose empty rhetoric in the formulation of objectives in e-Government. As mentioned in the introduction, a specific classification range of public values is frequently mentioned in the literature. Jørgensen and Bozeman (2007) identify 72 public values and conclude that they can be classified based on their relations towards each other (for example, by constructing hierarchies that separates end values from mean values, also mentioned by Keeney (1992, 1996)). As mentioned in the introduction, public values can be defined as what is considered as consensus about what is 'right' (Bozeman, 2009), and a behavior based on this notion of 'right' (Bannister and Connolly, 2014). In the light of decision theory, when values are interpreted as the driving force behind decision making they become more than just a behavior: values become the end-objectives of decision making (Keeney 1992, 1996). Moore (1995) argues that three conditions must be satisfied for governments to create value: first, whatever activity is to be undertaken, it must be of value to civil society; second, elected politicians and policy makers need to support the creation; and third, it must be feasible for the public administration to perform the necessary activities.

### **2.2.2 Decision making**

Decision makers might strive for rationality; however, as Simon's (1955) concept of "bounded rationality" implies, they can only be rational up to a certain limit. According to Cohen et al. (1972), bounded rationality implies that decision makers often do not possess all of the information required about a problem and thus cannot see all available solutions. A decision might sometimes even be disconnected from the actual decision problem, with choices only being made when the organizational context allows for action (which is also known as the "garbage can model of organizational choice"). A decision might also be dependent on how the decision problem is presented, or "framed" (Kahneman and Tversky, 1984). Nielsen and Pedersen (2014) argue that local government managers should improve their decision-making styles instead of replacing them with ideals that are incompatible with the individual and organizational contexts at hand.

Nonetheless, a literature search in the e-Gov reference library database (EGRL, 2017) reveals that the e-Government literature on decision making is somewhat sparse. Decision makers and decision making are mentioned briefly in some papers, but they are rarely the main topic. Many papers are devoted to decision support systems and models for using ICTs to include stakeholders in participation processes (a subfield of e-Government known as

e-participation). Hence it can be concluded that technological support for decision makers to utilize is not lacking. Decision tools were studied before the rise of the internet and e-Government (see e.g. Angell and Smithson, 1991). A study of three global organizations concludes by stating that simply adding an “e” to concepts such as democracy and participation does not necessarily lead to inclusive, resilient and responsive decision-making outcomes (Li, 2010). Andersson et al. (2012) present a case in which a formal decision model is employed for public planning but the decision makers do not use the results, based on the argument “You can’t make this a science!” (see also Grönlund, 2005). In a sense, this is true. Decision tools often require numerical inputs. In highly uncertain situations, such inputs might be nothing more than “guesstimates” – and garbage in leads to garbage out (Angell and Smithson, 1991). Another conclusion from this reasoning could be that uncertainty needs to be reduced for a decision maker to even be able to act in accordance with his or her preferences. Uncertainty in relation to decision making and e-Government is further treated in 2.2.6: Risk and uncertainty.

### **2.2.3 Stakeholder inclusion**

Keeney (1992, 1996) argues that the early involvement of relevant stakeholders in a decision process is beneficial for generating alternatives that had not been previously considered. In e-Government, it seems difficult to suggest improvements in services, without knowing what the users want (Flak et al., 2003). Flak and Rose (2005) discuss stakeholder theory vis-à-vis e-Government and present several definitions gathered from the literature, one of the broader of which is “any group or individual who can affect or is affected by the achievements of the organization’s objectives” (from Freeman, 1984). Stakeholders can also be non-human entities (Whitley and Pouloudi, 2000). Cook and Harrison (2015) conclude that public value analysis may be beneficial for identifying internal and stakeholder values to improve an agency’s change management and communication strategies. Axelsson et al. (2012) argue that stakeholder participation needs to be an integral component of e-Government development, not a separate activity.

Whereas many papers mention stakeholder inclusion as a crucial success factor, critical streams of literature point out the difficulties in extracting a large number of values from a limited number of participants (Gidlund, 2012). An example of such a concern is the digital divide: the gap between users who can access the benefits of electronic services and those who cannot. Wihlborg et al. (2017) argue that current e-Government practices may increase these gaps, or create new barriers for users who reside outside the norm.

#### **2.2.4 Weighting and resource allocation**

Since strategic decision making can be viewed as allocating limited resources in order to achieve objectives, knowing about a decision maker's values and objectives is of importance in resource allocation management (Kleinmuntz, 2007). Resources in the public sector are based on fiscal funds. Public servants are supposed to work towards a public ethos, for less monetarily rewards than are available in the private sector (Boyne et al., 1999). Bannister and Connolly (2014) point out, the implementation of ICTs is not value free; it requires decisions about – and sometimes trade-offs between – values. Hellberg and Grönlund (2013) argue that values need to be negotiated when multiple organizations are collaborating to integrate their services in interoperability efforts. Seeing as resources are limited, public managers need to choose what values to prioritize. Rose et al. (2015:1) mention the contrast between efficiency values, measurable in economic figures and citizen empowerment values, which are usually time consuming and difficult to assess. These authors also reveal that Danish public managers prioritize administrative efficiency while neglecting citizen empowerment values. Bonina and Cordella (2009) argue that the main driver for deploying ICTs in the public sector has been the efficiency ideal from NPM.

#### **2.2.5 Outcomes assessment**

A rational decision making process does not necessarily entail a successful outcome. Retrospective assessment of the decision is nevertheless important because it might aid to uncover problems in the decision making process (Eisenführ et al., 2010). The assessment of IS has been studied and debated in the literature for a long time (see e.g. Gallagher, 1974). Seeing the limited increase in productivity parallel to a rapid development of IT in the society since the 1970's has led to doubts concerning the potential of such technology. However, the underlying reasoning of measuring productivity emphasizes an efficiency ideal. Heeks (2006) points out that traditional methods such as cost-benefit analysis might not be suitable for measuring a diversity of benefits. There are several aspects from which an IS can be evaluated, including (Lyytinen and Hirschheim, 1987):

- Correspondence: preset goals in the initiation of development.
- Process: finishing development according to time and budget.
- Interaction: service uptake, satisfied users.

- Expectation: the expected values of stakeholders and their perceptions.

Each aspect has its advantages and downsides. For example, deadlines and money are easy to assess, but just because a project delivered in due time and budget does not mean the users perceive the outcomes as satisfactory. Stakeholder values might be better to reflect the quality of an IS, but questions arise of how to accurately measure such expectations (Lyytinen and Hirschheim, 1987).

In e-Government, multidimensional evaluation is suggested for achieving holistic measures that monetary approaches alone cannot catch (e.g. Luna-Ryes et al., 2012). Frameworks for stakeholder-based assessment (e.g. Castelnovo, 2013), as well as public value approaches to evaluation (e.g. Hellang and Flak, 2012; Scott et al., 2016; Prakash et al., 2009) are other, non-monetary alternatives of measurements.

### **2.2.6 Risk and uncertainty**

According to Beck (1992), our society has undergone a transformation from an industrial era to today's "risk society." The process has been unintentional and unseen and is not something that can be chosen or rejected.

While scientists have tried to calculate the likelihood of future events for centuries, it was not until the 1960s, risk became an applied field of science (Ball, 2007; Hansson 2005). Risk management became important for several areas, including the health, industrial and nuclear power sectors (Ball, 2007).

Some variations exist in the definition of risk; for example (Hansson, 2007):

1. An unwanted event that may or may not occur.
2. The cause of an unwanted event that may or may not occur.
3. The probability of an unwanted event that may or may not occur.
4. The statistical expectation value of unwanted events that may or may not occur.
5. The fact that a decision is made under conditions of known probabilities.

The first four definitions all reflect *uncertainty* concerning an *unwanted* event. The fifth definition comes from a strand of decision theory in which probabilities need to be known in order for something to be defined as a risk. However, as argued later in this thesis, objective probabilities are problematic to say the least.

Uncertainty is central to the notion of risk: if we know a negative event will occur, it is a fact and not a risk. Furthermore, an event can hardly be classified as a risk if no one perceives that event (or its consequences) as unwanted. The interpretation of risk hence depends on both the ability to predict events as well as a perception of what is of value to humans. Uncertainty can be epistemological or ontological. Epistemological uncertainty is when we do not have enough knowledge about a phenomenon to predict what is going to happen. In contrast, ontological uncertainty is based on the idea that the world has built-in features that create uncertain outcomes (a world-view known as indeterminism). While risk concerns negative impacts, uncertainty also applies to positive events: opportunities. Johansen et al. (2016) argue that opportunities are often overlooked when uncertainty management is conducted in large projects. Bekkers and Thaens (2005) argue that the complexity of the notion of risk and state of modern society together make it impossible to define risk as a general policy concept. They suggest using a variety of risk governance models with different value approaches associated with government, the private sector and civil society.

Pardo and Scholl (2002) describe the difficulties of risk in relation to e-Government as causes for failures being intertwined in technical, social and behavioral factors. Weerakkody et al. (2015) conclude that issues such as costs, opportunities, benefits and risks in e-Government are indeed mentioned in the literature but only superficially treated. Røberg et al. (2014) observe that research on risk and risk management in relation to e-Government is sparse. However, notions like “challenges,” “barriers” and similar terms are used as opposites to success factors in both IS and e-Government literature (see e.g. Lam 2005, Goldkuhl 2009, Loukis and Charalabidis 2011). Essentially, these issues can be interpreted as risks and thus classified in different ways:

- Technological risks (e.g. standards, interoperability, privacy and security)
- Political risks (e.g. governance, common objectives).
- Organizational and institutional risks (e.g. government reform, processes and management)
- Legal and regulatory risks (e.g. policy making, privacy issues).

Several papers focus on risk perception in relation to citizen acceptance of new technology, linking risk with trust issues. One reason for honing in on risk perception is that subjective notions of risk are easier to study than “actual” or objective risk (Beldad et al., 2011). Savoldelli et al. (2014) argue that policy makers should not just focus on increasing service adoption; they suggest that

the keys to producing public value are instead combining transparent participatory processes with evidence-based smart government and trustworthy decision making. Johansen et al. (2016) point out that uncertainty not only applies to risk, but also to opportunities, which are often overlooked in large projects.

The dual features of risk (i.e. uncertain events and values, objective and subjective probabilities) serve as the foundation for the epistemological positioning in section 3. The points of departure are that risk is a phenomenon too complex to be studied from just one point of view and that different scientific approaches could complete each other by using a variety of methods. Such assumptions seem appropriate within the multi-disciplinary e-Government field.

# 3 Methodology

This section address the following:

- Epistemological positioning
- The study's research design and procedures
- The methods used (including their motivation)
- Ethical considerations

## 3.1 Epistemological considerations

### 3.1.1 Philosophical foundations

The nature of knowledge has been debated within philosophical and scientific communities throughout the ages. At a time when the Enlightenment – and its ideas about the almost unlimited potential of scientific progress – were flourishing, the Scottish philosopher David Hume (1711-1776) presented uncomfortable arguments about the human capacity to understand the world. Even if it is probable that the sun will rise tomorrow, we cannot infer that it will from our given knowledge (i.e. prior experiences of the sun rising). Such "knowledge" cannot be turned into a general law solely by experience: we can discover events by experience but we cannot discover necessary connections between cause and effect. When one billiard ball hits another, we simply find that one event follows another; we do not identify a causal connection between the events (Hume, 1999). A possible solution to Hume's problem was presented by the German philosopher Immanuel Kant (1724-1804) in the *Critique of Pure Reason* (1781). Kant argues that time and space are the pure forms of all sensible intuition. These a priori sources of knowledge apply to objects only as far as objects are viewed as appearances and do not present things as they are in themselves. Kant also asserts that we possess categories that we use to sort and understand objects. One such category is causality, which implies that causation is not a property of experienced objects in themselves – but given to us a priori together with the time and space in which the objects are manifesting themselves in the form of appearances (Kant, 1993).

Kant's "solution" to Hume's skepticism seems at first glance to be retaining the notion of causation, but his argument also removes a large part of our connection with reality. If space, time and causation are components of our minds, Kant's philosophy appears to lead us toward relativism. Hume and Kant had different views on what constitutes reality and how knowledge

arises; scholars today have similar arguments about ontology and methodology. Positivism and constructivism are usually presented as the extremes of a spectrum of methodological positions.

### **3.1.2 Subjective versus objective risk**

Objective risk is based on statistics and earlier experiences from which probabilities for future events can be predicted. Subjective risk is dependent on personal beliefs. In the heart of subjectivist theory lies Bayes' theorem, which tells us we can more or less make any probability statement based on current information; moreover, we can revise earlier statements based on new information (Thompson, 1990). Nonetheless, both the objective and subjective views are subject to several difficulties. Aven and Renn (2009) argue that uncertainties are not objective components of the world, but rather human constructs that need to be assessed by somebody (and might become real). Furthermore, objective risk assessment seems to assume that the decision maker has access to complete information. The only being that has this sort of complete knowledge is Laplace's demon: a creature that lives in a deterministic world and knows the position and velocity for every particle in the universe. This demon has full knowledge of what has happened in the past and thus of what will happen in the future. (Laplace never used the word "demon"; he referred to "*une intelligence*." See LaPlace, 1825) On the other hand, subjective risk seems to come with the odd feature that our probabilities can never be wrong (Thompson, 1990). Hansson (2010) argues that both the objective and subjective views are attempts to rid a complex concept of its complexity.

### **3.1.3 Towards a pragmatic standpoint**

Seeing as risk is associated with causes, events and consequences, it can be presupposed that it takes place in something we can refer to as the real world. This world is our arena, and we have some sort of connection to it. However, our knowledge of the world is not complete: we either have incomplete information (i.e. epistemological uncertainty) or the world has certain features that make events based on probabilities (i.e. ontological uncertainty). Risk is also dependent on human perception: what is classified as risk is based on what humans value. Values vary by culture, individual and time; they are social constructs. It ultimately becomes a question of methodology, and scholars often position themselves somewhere between the research

paradigms of naïve positivism and cultural relativism (constructivism) (Ball, 2007).

A point of departure in this thesis is that different methodologies can complete and learn from each other. Instead of positioning the work in the crossfire between two research paradigms, a commensurable approach is used. Such a mixed approach not only protects the work from falling into the gaps of naïve realism, but also – by not sawing off the branch we are sitting on – from being lured into relativism. The idea of blending ideas from positivism and constructivism is referred to as pragmatism by Creswell (2009). However, the term “pragmatism” is somewhat misleading seeing as it suggests taking a practical approach to science instead of a paradigmatic stance. The idea of pragmatism is to let the research problem guide the choice of method; in this thesis, it is rather the theoretical concept of risk that guides the methodological reasoning. One could also question the idea that the positivist and the cultural relativist do not choose methods based on their research questions: they instead avoid certain questions that do not fit into their paradigms and stick to questions that are suitable to investigate using traditional approaches (which are often labeled as qualitative and quantitative). Throughout the thesis, the words “qualitative” and “quantitative” have been used with caution. Although these terms are often employed to describe methods, they actually describe data; qualitative data consists of words, quantitative data of numbers. A method per se cannot have qualitative or quantitative properties (Åsberg, 2011).

## 3.2 Research design

This thesis includes four papers with corresponding data, as described in Table 2. Paper I and II is based on qualitative data from three case studies. Paper III is based on quantitative data from a survey. Paper IV is a concept analysis of prior research.

**Table 1:** Research design

<b>Paper</b>	<b>Material</b>	<b>Analytical tool</b>
I: Risk and Decision in Collaborative e-Government: An Objectives-Oriented Approach	Seven interviews from two case studies. Government documents.	Logical framework approach
II: Decision Making and Value Realization in Multi-Actor e-Government Contexts	Nine interviews with from one case study. Project documentation.	Actor network theory
III: The Impact of Formal Decision Processes on e-Government projects	56 respondents from a survey	Descriptive and inferential statistics
IV: Value-based decision making: Decision theory meets e-Government	Prior research	Concept analysis

Cases were selected based on complexity and scale. All three case studies represent collaboration among government agencies. As suggested by Walsham (1995), interview data is the main source of empirical material in the case studies. This data has been supplemented by documentation related to the cases, to enrich the empirical material through triangulation. In the first paper, the two cases stemmed from the same initiative but later became stand-alone projects. The main actors involved were national government agencies, even if municipalities could also choose to participate in the development. The case in the second paper was also a collaborative initiative, but on a municipal level. According to Bryson et al. (2006), collaboration in the public sector is established in turbulent environments, after a single agency has failed to solve a problem on its own. These initiatives contain the necessary ingredients for complexity: multiple stakeholders and values, organizational variety and differentiated technological maturity. The reason for focusing on complexity and scale is because not all decisions need to be targeted by formal

decision analysis; as such, a distinguishing mechanism is required. Keeney (2004) argues that most decision problems are “no-brainers” and few are complex enough to be subjected to thorough (decision) analysis. As mentioned above, the mechanism in the case studies was collaboration initiatives. The respondents in Paper III includes a mix of national and municipal agencies, with the common denominator that the projects they are involved in have a budget of at least SEK 1 million. This limit was set to ensure that data was being retrieved from large initiatives and thus to avoid Keeney’s no-brainers. The empirical material in the thesis stems from the Swedish public administration and it might not be applicable to other contexts. The theoretical concepts should be beneficial for other purposes as well.

### **3.2.1 Ethical considerations**

Resnik (2005) describes 12 ethical considerations that a scientist should take into account when conducting research. The approach in this thesis on the issues that are applicable is described:

- **Openness and Education:** The four papers of this thesis have been peer reviewed and three of them published under Open Access license. Ideas have been shared and discussed at courses, workshops and conferences.
- **Credit:** Credit has been given accordingly in the form of acknowledgements, references and co-authorship.
- **Respect for subjects:** Informants and respondents have been promised confidentiality. During interviews, informants have given their permission to be represented by their roles in relation to the studied cases.
- **Responsibility:** The results should contribute to an increased theoretical development and understanding of the e-Government field, as well as improved practice.

In addition, Walsham’s (2012) suggestion that each researcher within the IS field ask whether the research leads to a better world has been considered. Concerning this thesis, the answer is that it would not have been written if the results were not thought to be of benefit to society. The choice of using public value theory is normative, given that these values represent the public good, or ethos.

### **3.2.2 Paper I**

The first empirical material in this thesis was gathered through two case studies of Swedish e-Government initiatives in which national agencies collaborated to create e-services; the results are presented in Paper I: *Risk and Decision in Collaborative e-Government: An Objectives-Oriented Approach*. The Logical Framework Approach (LFA) was chosen and adapted as the analytical lens, which allowed the results to be structured into a framework of cause and effect. The material was interesting to frame into case studies given that the cases stemmed from the same initiative but had different success trajectories. The LFA incorporates basic features of a decision-making situation, which can be summarized in a logical framework (or log-frame). The LFA is further described in Paper I.

#### **Case 1: The Business registration portal (BRP)**

The process of starting a business in Sweden includes utilizing services from three national government agencies: the Tax Agency, the Companies Registration Office and the Agency for Economic and Regional Growth. Before the process was digitized, employees from each agency could be positioned in separate booths at information conventions that targeted entrepreneurs. Each agency told the visitors “come to us if you’d like to start your own business,” but the information was inconsistent and sometimes contradictory. To solve the problem, agency employees suggested to their general directors that it would be beneficial to make a common information folder. At this time, many government agencies had started to create their own electronic services; the information folder idea hence grew to include e-services as well. In 2009 the Business Registration Portal (BRP) was developed as a collaborative initiative among the three aforementioned agencies. BRP features an e-portal that users can utilize to register their companies and manage information related to their businesses.

#### **Case 2: The Government message service (GMS)**

During the development of BRP, the involved agencies identified common needs for a messaging service that would replace written government mail to citizens. The initiative was initially part of the BRP network, but it was later turned into a separate project and stand-alone e-portal. The Tax Agency was given overall responsibility for this Government Message Service (GMS). At the time that Paper I was written, seven national agencies and one municipality were participating in the development. A fully functional portal

that citizens can use to sign up for digital mail has been in operation since 2011.

### **3.2.3 Paper II**

The next case study undertaken looked at another collaborative initiative, but this time on a municipal level: five municipalities involved in a European Union (EU)-funded project striving to create e-services for building permit applications. Case selection was once again based on collaboration and the hope that data from another level of government would enrich the overall results of the thesis. Another reason for choosing this case was access: the author was already acquainted with the initiative and complete project documentation was available through an online portal. The results are presented in Paper II: *Decision Making and Value Realization in Multi-Actor e-Government Contexts*. The analytical framework changed between Paper I and II. The reason for the change was that the results in Paper II could not have been properly explained by LFA. The second paper's case created some unexpected effects that was more suitable to analyze by using Actor Network Theory (ANT) (the LFA focuses more on analyzing expected effects). When describing the Swedish informatics discipline, which is similar to what is known as IS in English, Dahlbom (1996) refers to an ongoing debate on whether technology determines society or vice versa: "People and technology have become intertwined. You cannot understand the one without the other." In Paper II, ANT was used to identify the values inscribed into a technological artifact by its creators. Then, it was possible to explain how the inscribed values were spread to other networks of actors, as well as the factors that prevented value realization.

### **Case 3: The Regional digitalization initiative (RDI)**

The third case study concerns collaboration among five Swedish municipalities that was partly financed through the EU's structure fund for regional development. The region in which the Regional Digitalization Initiative (RDI) was implemented is characterized by low population in relation to geographical area. The initiative's purpose was to make it easier for businesses and citizens to access geographical data and apply for building permits by creating a series of e-services that connect to digitized maps.

### **3.2.4 Paper III**

The case studies give insight into the circumstances in which decisions are made and the uncertainties that may prevent value realization in the studied context. Although the first two papers contain some suggestions for improvements that may be beneficial for value realization, they are made within the limited generalizability of the case study. Paper III: *The Impact of Formal Decision Processes on e-Government Projects*, utilizes statistical methods for investigating the impacts formal decision making can have on the outcomes of e-Government initiatives. The study is carried out by conducting a survey which was administered to Swedish municipalities and national agencies.

A survey is a method for obtaining an overview of a group. Groups can be communities, organizations, professions and similar entities. Surveys often provide a snapshot of a period in time, but they can also be used in longitudinal studies. Formulating good questions is one of the main challenges in a survey; they need to be clear, unambiguous and precise. The optimal question is short and does not contain too much detail. A question is also not supposed to be leading for the subject. Starting with non-threatening background questions might be a good point of departure. Moreover, survey options and directions should be clear (Janes, 1999).

The first challenge in creating the survey was to convert the theoretical constructs from section 2 into precise questions. The second challenge was to translate the constructs into Swedish without losing meaning and then translating the survey responses back into English. The final challenge was to form groups suitable for statistical comparison to determine if and how successful initiatives distinguished themselves. The results from Paper III are possible to replicate in other settings, given that the same groups (success / failures / non-assessed initiatives) and categories (concepts from decision theory) are used.

### **3.2.5 Paper IV**

The final paper in this thesis uses concept analysis to tie decision theory together with concepts from the e-Government literature. Paper IV: *Value Focused Decision Making: Decision Theory Meets e-Government*, is a compressed version of the theoretical section (2). In addition to comparing theoretical concepts, the paper also contains suggestions of existing practices that can be utilized for involving stakeholders throughout a decision process.

## 4 Results and discussion

In this section, the results from Paper I-IV are synthesized with the aid of the theoretical concepts from section 2, namely decision making, values and objectives, weighting and resource allocation, risk and outcome assessment. Stakeholder inclusion is discussed in relation to each construct, as suggested in Paper IV. The section begins with a description of the case studies and the survey; thereafter their results are presented and discussed.

**Table 2: Main findings**

<b>Paper / Research Question</b>	<b>Paper I</b>	<b>Paper II</b>	<b>Paper III</b>	<b>Paper IV</b>
RQ1	Public values should serve as the objectives of e-Government. Risk in e-Government can be defined as threats to public values.			Several concepts from e-Government can be tied together by value-focused decision theory.
RQ2	A lack of formal support factors for collaboration creates a high degree of uncertainty.	Risks as well as opportunities may reside outside of artificial borders (such as geographic areas and projects).	The Swedish e-Government relies on many project models.	
RQ3		A broad approach to stakeholder inclusion should be beneficial for identifying risks as well as opportunities.	Successful initiatives distinguish themselves by adopting more activities related to formal decision making.	Stakeholder inclusion should not be treated in isolation; it should instead permeate other concepts.

## 4.1 Values and objectives

Values are a fundamental driving force and should guide all decision making. In the public sector, a range of public values exists and can be classified based on their internal relations as well as by different paradigms. A point of departure in this thesis has been that public values should be treated as end objectives in e-Government.

The national agencies involved in the development of BRP and GMS had different priorities vis-à-vis values; for example, one agency wanted to improve services for civil society whereas another focused more on administrative efficiency. Central government does not supply the collaborative initiatives with any formal support mechanisms and strategic documents are not accompanied by action plans. Through an iterative development process that featured continuous user input, BRP managed to establish a portal for business-related e-services that is now being further developed to include additional actors. In contrast, GMS has failed to convince citizens and government agencies to start utilizing the service.

The purpose of the RDI was to make it easier for businesses and citizens to access geographical data and apply for building permits; the proposed solution was a series of e-services that would be connected to digitized maps. The software platform created within the RDI was built in open source and characterized by high flexibility and potential interoperability. Seeing as the created e-services could easily be shared among organizations that used the created platform, some interesting but unexpected effects soon appeared. For instance, several other collaborative initiatives in the Swedish public sector were launched and started using the platform. Moreover, government agencies were motivated to share and streamline their services, freely and in compliance with laws and regulations. As pointed out by Johansen et al. (2016), uncertainty management does not only apply to risks but also to opportunities. Seeing as values can always be associated with stakeholders, the prescriptive suggestion in Paper II was to look beyond artificial borders, (such as project and geographical areas) when including actors, to capture and plan for the benefits arising from the innovations like interoperable software.

In Paper III the successful initiatives distinguished themselves by setting objectives based on input from relevant stakeholders. Stakeholder inclusion in the case studies was based on existing users of services (e.g. user input during the development of BRP, a survey to existing users in GMS and some follow up calls to users of the e-services created within RDI). The results supports the idea of stakeholder inclusion as a success factor, but also

acknowledges the importance of adapting a holistic approach: by only focusing on existing users, a large part of potential stakeholders, and their values, might be left out.

## 4.2 Decision making

Decision making in government is an area where rationality is contested by political, organizational and stakeholder diversity. An initial observation was that the studied cases were initiated from a grass-roots level, when groups of employees identified anomalies (as with BRP) or opportunities (as with GMS and RDI). The formal decisions to start the development came from general directors (when national agencies were involved) as well as from heads of municipalities. These decisions are made under severe uncertainty about the outcomes. Based on prior experiences of cost overruns of e-Government initiatives, BRP was given a budget six months at a time. The decision to initiate GMS was based on calculations of cost-savings from reducing the volumes of written government mail, based on input from four national agencies. Seeing as the Swedish public administration consists of ~550 agencies, the prognosis was highly uncertain, especially since it was voluntarily for both agencies and users to start utilizing the service. In RDI, funding was less of an issue since EU supplied half of the economic resources to the project and the municipalities could deploy the other half in the form of working hours. However, two years into the development phase, it was still uncertain what the initiative was expected to deliver.

With few exceptions, consensus decision making is a common approach in the studied cases and is also how issues concerning e-Government are treated at a departmental level; no specific department has a mandate to make decisions concerning how all-of-government should act.

A heavy use of project terminology can be found in the material. Among the initiatives that claim to employ a decision method or model (n=39), a total of ten established project models were referred to and additional models unique to a particular organization were identified. The respondents who did not claim to use a decision method or model often referred to project organization as a description of how decisions were made.

In RDI, informants described the formation and formalization of the steering group as a success factor, including the use of a commonly used project model. However, the relations beyond the RDI project affected the members' performance as well as the outcomes of the initiative.

### 4.3 Weighting and resource allocation

Value prioritization in a context where rationality is contested by politics, stakeholders and organizational diversity is the reality of the public manager. Different areas of responsibility are competing over the allocation of fiscal resources. The results from Paper III indicate that service improvement and administrative efficiency, often in combination, are common motivations in the Swedish e-Government context. Citizen empowerment values were not as common (which corresponds with the findings by Rose et al. (2015:1) in the Danish context). The successful initiatives performed weighting of objectives to a larger extent than the failed initiatives. Resource allocation is the least pursued activity among the initiatives in the survey.

The case studies describe the difficulties in allocating and distributing resources between government agencies. One concern in the BRP and GMS was the “investment paradox”: no method existed for distributing resources among agencies after eventual benefits had been established. It was possible that one agency could do most of the work while the (internal) benefits could be reaped elsewhere. In the BRP, human resources were described as being based on interest in participating rather than on matching competences.

In RDI resource allocation was described as problematic. A demand from the EU required the five municipalities to supply half of the resources to the SEK 23 million initiative. The municipalities chose to support the project via supplying working hours. However, working hour quantities did not necessarily mean that the right qualities – or more specifically, competences – were matched. The resources that municipalities were required to provide were based on their populations. Consequently, smaller municipalities used all of their time in the steering group and did not participate in the actual operational work. Every participating municipality thus had the same amount of influence on decision making in the RDI, but they did not have to supply resources for operationalizing decisions. Given that smaller municipalities have fewer resources than their larger counterparts, the Swedish Association of Local Authorities and Regions is currently investigating the possibility of allocating monetary resources based on the population size of the municipalities, for example when making common investments in ICTs.

## 4.4 Outcomes assessment

Although multi-dimensional frameworks for capturing the realized values from ICTs exist, the question persists of how to establish measurements which allows assessment of a wide range of values beyond efficiency and cost-savings. E-Government benchmarks by the European Union and United Nations focus on service uptake, which may not reflect much else than a country's adoption of technology.

A SEK 72 million-utility indicator was originally set in BRP, but it has never been measured given that the outcomes could not be converted into monetary terms. Assessment has instead been in the form of satisfied user basis and the percentages of companies being registered through the e-services. The project leader reports that these evaluations are being assessed on a regular basis.

In GMS, the focus has been on achieving cost savings by replacing written mail with an electronic alternative. When Paper I was submitted (January, 2015), eight out of hundreds of potential government bodies were sending some sort of message through GMS; as at the beginning of 2017, that number had increased to 17. A 2016 report (Riksrevisionen, 2016) states that the GMS cost SEK 146 million SEK to develop and that only 420,000 users have signed up for the service. This number has increased to 1 000 000 in early February 2017, shortly after the Tax Agency announced that users who utilized the service would get their tax refund earlier than those who did not.

The realized, expected effects of RDI were quite humble: the municipalities and the EU had spent SEK 23 million to establish a number of e-services that reportedly created some external value to citizens and businesses. Assessment was never planned within RDI, based on the argument that it was up to each municipality to measure its results. At the time of writing Paper II (March, 2016), no assessment had been undertaken except for some efforts to ask users what they thought about the e-services. The users reported that they were "generally happy" with them; internal administrators reported not being as satisfied with the e-services, seeing as they had not increased these employees' efficiency.

In Paper III, several initiatives with unknown trajectories were identified. No evaluation was planned and these initiatives generally performed less activities related to formal decision making than the successful initiatives.

## 4.5 Risk and uncertainty

Most definitions of risk from decision theory reflect *uncertainty* regarding *unwanted* events, causes or consequences. Research on risk management in e-Government is sparse (Røberg et al. 2014).

The successful initiatives in Paper III distinguish themselves by performing more thorough risk analyses: compared to failed initiatives they focused more on organizational issues as well as on more types of risks. Among all initiatives, technological and project specific factors were the most common type of risks investigated and political factors were the least investigated. In the studied cases, risk analysis was conducted early but had a different focus in each instance. In BRP a great emphasis was devoted to project-specific risks, whereas the focus in GMS was on mitigating security risks. The difference may stem from the fact that BRP was established based on existing services from the participating agencies, while GMS was developed as a new service. In RDI the most severe risks were judged to relate to technology and how to communicate the project to the involved organizations. In Paper III, risk analysis was commonly reported to be done as an integrated part of a project model.

GMS relied on the participation of multiple national agencies and municipalities to be able to deliver enough value to attract citizens to sign up for the service. Preliminary efficiency calculations based on a reduction of postage costs were made under extreme uncertainty, as it was not possible to know how many agencies would choose to participate by sending messages through the portal. When the central government makes its annual appropriations to national agencies, it asks them to consider the benefits of starting to send mail through the portal to save postage costs. One agency answered that it could see benefits beyond reduced postage costs, but that the missing capacity for two-way communication limits the values that can be realized using the GMS as it currently stands. In a survey conducted within GMS, citizens specifically asked to be able to receive mail from large government agencies. However, it was not feasible to act on the input because the involved agencies did not have any mandate to compel other government actors to participate. The Tax Agency has pledged to the central government that it will put more pressure on government agencies to participate in the GMS. In its 2017 appropriations, the central government requires national agencies to start sending at least one type of message through the portal.

Increased administrative efficiency was not achieved in the RDI because the vendors of internal systems used for case handling refused to open their

software to the e-services created within RDI. Two types of software traditions met, and no agreements could be established: the generic open source solution versus licensed, tailor-made software.

The case studies in this thesis have all delivered at least one technological artifact. In paper III, the respondents interpreted “not fulfilling objectives” as initiatives that was abandoned or never reached the development stage (i.e. Heeks (2003, 2006) notion of total failure). However, given the different trajectories of the artifacts created within the case studies, there are reasons to suspect that a “murky middle” of systems exists, with unknown qualities.

Seeing as public values can be treated as end-objectives of e-Government, it would also be possible to express risk in relation to these values. Hence, a suggestion in this thesis is to define risk as potential threats to public values. This would require a decision maker to go beyond service uptake and ask what is at stake, and for who?

# 5 Conclusions

The purpose of this thesis was to explore public values and decision making in the Swedish e-Government context. Three research questions were posed; below are conclusions linked to each.

## **RQ1: How can public values be utilized in decision making?**

The theoretical contribution of this thesis is associations between public values, decision theory, and e-Government. A point of departure is that public values should be treated as the end objectives of e-Government. Several activities within e-Government can be tied together under decision theory, and it is possible to relate objectives, risk and uncertainty to public values. Treating risks as threats to public values put demands on a decision maker to focus on what actually is at stake and for who, instead of trying to optimize service uptake for benchmarking. Several approaches for utilizing public values in different steps of decision making, such as resource allocation and outcomes assessment are mentioned in the literature. Treating public values as integrated features of decision making should be beneficial for promoting transparency where the motives behind a decision as are clearly articulated and relevant stakeholders identified.

## **RQ2: Under what conditions are decisions made in the studied context?**

The empirical material has provided insights into decision making contexts in which a high degree of uncertainty exists. One cause for uncertainty can be traced back to a lack of formal support factors which prevents the involved government agencies to carry out activities necessary for value realization. Examples of such activities are allocation of resources and acting on user input. While the results suggest that stakeholder inclusion is a success factor for beneficial outcomes, the studied practices have a tendency of focusing on existing users only.

The motives behind e-Government from central government range from increased efficiency, openness and easy-of-use, to a rhetoric of becoming an e-Government superpower.

The public administration relies on a variety of project models which constitute the arena in which decisions are made and risk analysis is being conducted. However, many risks as well as opportunities reside beyond the studied projects' control.

### **RQ3: How can value-based decision making be adopted by e-Government practice?**

The following suggestions of improved practice should be beneficial for improving the outcomes of e-Government initiatives:

- Holistic stakeholder identification and inclusion throughout the development of an initiative. Stakeholders include current and potential users as well as technological artifacts.
- Thorough risk analysis, with focus on a broad spectrum of issues that may prevent value realization. Relate risks to stakeholder values.
- Further explore the possibilities of applying concepts from decision theory to e-Government.

These activities may decrease uncertainty as well as assist in identifying opportunities for value creation. However, although it is possible to suggest remedies within the situation described in RQ2, the remedies presuppose the existence of formal support factors that make it feasible for the public administration to undertake relevant activities.

## **5.1 Further research**

In a 1959 paper on the topic of search for extraterrestrial communication, Cocconi and Morrison conclude that “The probability of success is difficult to estimate; but if we never search, the chance of success is zero”. The argument is transparent because it recognizes a high degree of uncertainty related to the objective. The Swedish government’s rhetoric about gaining a position as a leading e-Government is less clear: what is the potential value of such ambitions, and what is at stake? Hence, a suggestion for further research is to continue to explore the bounded rationality in e-Government by examining the motives and values of the decision makers. Is the main motive the dream of having open, efficient and easy-to-use services, or are other values (e.g. prestige) involved as well? When these issues are sorted out and the drivers for e-Government are identified, decisions can be made, resources committed, and values realized.

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