

# Exploring the Use of Robotic Process Automation in Local Government

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Abstract: This paper presents an ongoing research project designed to map the current use of Robotic Process Automation (RPA) in local government. The project runs over three years (2020-2022). The empirical foundation consists of multiple qualitative and interpretative case studies, conducted in close cooperation with practitioners working in a set of Swedish municipalities. The theoretical foundation rests on previous work on stakeholder management and public value creation in the e-government domain. Through this project we ultimately strive to develop an analytical tool that can be used by researchers and practitioners to decide if, and to what degree, a specific case handling process can (and should) be automated. In this paper, the background and overall design of the project is presented, together with a discussion on our preliminary and expected findings.

Keywords: Robotic Process Automation, Public Service, Local government, Qualitative Case Study

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#### 1. Introduction

A new wave of digitalization initiatives is rolling over the public sector; this time involving the technology Robotic Process Automation (RPA). In its simplest form, RPA can be understood as a software that is programmed to perform pre-set series of actions in various IT-systems. These actions can be used to e.g., imitate human users' interactions with IT-systems, and to integrate data from systems that could not otherwise be integrated due to technical or organizational constraints (Lacity and Willcocks 2016). RPA is not a new technology per se, but has just recently attracted attention by actors in the public sector as a relatively cheap and easy form of systems integration. As such, RPA is percieved as a potential stepping stone towards further automation of administrative routines and processes in public organizations, e.g., case handling in public service provision.

In this paper, we look at RPA uptake and use in local government, using Swedish municipalities as the empirical example. In Swedish local government, automation of case handling is currently discussed as a necessary means to reduce costs and increase quality in service delivery processes (SOU, 2016; SOU, 2014; SKR, 2018a). Swedish municipalities make interesting cases for investigating RPA uptake and use due to their relatively slow uptake of e-government in general. Although

digitalization has been on the municipalities' agendas for close to two decades, most of these organizations are still far from reaching the goals set in their digital agendas. There are exceptions, but the municipalities' digitalization initiatives have generally been slow and hampered by technological, organizational and legal hindrances (Goldkuhl et al., 2014). Still, case workers often need to compensate for poor IT-systems and lack of systems integration by transferring information manually from one system to another. This takes time, can be perceived as a boring task, and is associated with a number of risks for errors (SOU, 2014). The municipalities report that there is an increasing demand for systems development and integration, but that - at the same time - systems development and integration is too costly (SKR, 2018a). It is against this background that many municipalities are investigating if RPA can be used to automate some of the administrative work currently performed by case workers. RPA is hence seen both as a means to increase efficiency in local government, and as a means to advance the municipalities' digitalization and e-government maturity in general. Although we use Swedish municipalities as our empirical examples, the results of this project are likely to be of interest for local governments elsewhere.

The objective of this paper is to present the design of and expected results from an ongoing research project investigating the use of RPA in local government. First, a brief description of the background and related research is presented, followed by a description of the overall research design adopted in the project. Lastly, we discuss some preliminary and expected results of the project.

#### 2. Background - Case Handling Processes in Swedish Municipalities

Our ongoing research focuses on automation of case handling processes in local government. In the Swedish context, local government refers to 290 separate municipalities. Despite differences in size, there is no hierarchy or privileges; all municipalities are equal, to a large extent self-governed, and ruled by the same law (the so-called Municipality Law from 1992). According to the municipality law, all municipalities are responsible for providing public services, including social services, care for children and the elderly, public schools, libraries, emergency services, water and sewers, sanitation, environmental services, and building permissions. These services are financed by municipality tax, charges, and government subventions. In the Digital Agenda for Sweden, authored by the government, the public sector (including these 290 municipalities) is asked to make better use of digital technologies in order to increase efficiency in administrative procedures and service provision to citizens. It is, however, up to each municipality council to decide to what degree its operations and services can and should be digitalized. Naturally, the same logic applies for the current call for increased automation of case handling processes; each municipality is responsible for deciding what kind of processes should be automated (if any), and how. Case handling, in turn, is defined as an activity in which "information is collected, managed, assessed, and communicated" (SKR, 2018b, p.5; our translation). Looking at this definition, most municipalities currently have ITsystems for collecting and communicating information (e.g., e-services towards citizens) and ITsystems for managing information internally in the organization (e.g. through ERP systems). Since most case handling processes involve some kind of decision-making, case handling is still very much a manual labor for employees working in Swedish municipalities (SKL, 2018b). This manual labor is associated with high costs for human laborers (e.g., social workers), as well as a high risk of human error; for these reasons, automation is seen and marketed as a way of reducing costs, and reducing errors in the information handling process.

# 3. Related Research and Identified Research Gaps

The e-government research field has always focused on the use of digital technologies to streamline and automate work in the public sector; although discussed under other labels. So why has automation of case handling processes (as part of public service provision) surfaced as a 'new' phenomenon at this point in time? Scholars highlight that although the use of digital technologies to automate work in the public sector is not new, the scope of what we can now automate has widened (Wajcman, 2017). Processes that have previously been considered as 'cognitive', and thus in need of human involvement or discretion (cf. Lipsky, 1980), can now be performed, at least theoretically, by machines. This means that automation in this particular context requires some closer attention. We have identified three research gaps related to automation of public service provision in general, and RPA use for automated case handling in particular, that require further attention from the e-government research community.

One of the first research gaps we identified concerns the meaning of *automation*; a concept that is not obvious in this particular context. Automation as a concept has been present for more than a century (Hitomi, 1994; Lacity & Willcocks, 2016), spurring discussions on whether automation and new technologies will replace human labor (Autor, 2015). RPA is yet another digital technology that can be used to replace human labor, considering that it can be programmed to 'imitate' a human user's interactions in one or several systems (Willcocks & Lacity, 2016). The aim is to streamline structured work tasks (Asatiani & Penttinen, 2016). Simply put, the 'robot' is a kind of script that manages information in and between existing systems and thus enables automation to various degrees; it can be used to (1) collect and manage information in a way that can prepare for a case worker's decision. RPA can also be programmed to (2) make decisions in cases that have clear-cut decision grounds, thereby excluding the human case worker from the case handling process. Last, RPA can be used to prepare ground for (3) more advanced and 'intelligent' technologies in the case handling process. Hence, promotors of this technology (e.g., Willcocks & Lacity, 2016), see RPA as a path to and enabler of future implementations of artificial intelligence, e.g. data mining and machine learning technologies. Looking at these different potential applications areas of RPA, what we now discuss under the label RPA is not a clear or fixed phenomenon and can take on different roles and functions in an organization. Hence, we need conceptual and empirical investigations on the nature of this particular technology.

Furthermore, there is a lack of empirical investigations of the consequences of RPA. IT consultants, policy makers and researchers all point to RPA and automation of case handling processes as a way to increase efficiency in local government (e.g., SOU, 2014; 2016). The discourse is however unnuanced and overly positive considering that empirical investigations and theoretical frameworks on the consequences of automation in this context are in short supply (Lindgren et al., 2019). Letting RPA-solutions handle information and make decisions in public service provision processes is likely to bring various (and different) consequences for a multitude of stakeholders; in

particular for employees that are currently performing the actions replaced by RPA (SOU, 2014). RPA can potentially create benefits for municipalities by supporting structured work tasks and diminishing the need for employees to perform repetitive and monotonous work tasks; in turn, reducing cost and reducing lead times (Lacity & Willcocks 2016; Madakam et al. 2019). However, there is also evidence that automation of this kind can lead to increased stress levels for the employees left in the process (Giritly-Nygren, 2009) and hence create new and costly problems for the local government to handle. Based on previous experiences (cf. Hood & Dixon, 2015), we also see an imminent risk that RPA is "hyped" and then fails to meet the high set expectations. It is, however, too soon to see the long-term consequences of RPA use in these organizations; research is needed in order to gain rich insights on what consequences RPA-supported case handling bring for the quality of work and output of local government.

Last, the current discussion on RPA as a means for achieving more efficient administrative routines in local government is too simplified. Previous research on information systems and egovernment illustrate how digitalized public service provision can vary greatly in technological and organizational complexity (e.g. Lindgren & Melin, 2017). In contrast, the discussion on RPA in local government typically distinguishes between only two types of public service processes; simple and complex (see e.g., the Swedish Association of Local Authorities and Regions (SKR, 2018b)). What processes should be classified as being simple, versus complex, is however not clearly operationalized. We want to challenge this simplified view on public service provision and contribute to a more nuanced and fine-grained understanding of automation of different kinds of case handling processes. There is, for example, research that indicate that case worker discretion is needed for some types of case handling processes (Busch & Henriksen, 2018), and that these processes might be unsuitable for automation - for equity reasons, rather than technical ones. Automation of case handling processes in this context also challenges our understanding of the actors involved in public service provision (Lindgren et al, 2019) and calls for further research. Today, the people responsible for automation initiatives in local government are given little, if any, guidance from policy makers and the research community on how to assess what services are suitable for automation, and to what degree a specific case handling process can and should be automated. Consequently, we see a clear knowledge gap that we wish to address.

## 4. Research Design

The project introduced here runs over three years, from 2020 to 2022. The project is lead by the author and is conducted by researchers from Linköping University1 and the IT University of Copenhagen2. The aim of the project is twofold; (1) to map current developments and use of RPA for automated case handling in local government; and (2) to develop an analytical tool that can be used by researchers and practitioners to decide if, and to what degree, a specific case handling process can (and should) be automated. In order to reach these goals and address the aforementioned research gaps, the project is guided by three research questions:

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- 1) How is automation of case handling understood and manifested in local government?
- 2) What are the consequences of automation of case handling for local government?
- 3) What is required to assess if, and to what degree, a specific case handling process is suitable for automation?

We perceive automation as a socio-technical phenomenon; including social-, organizational, and technical dimensions that are inherently intertwined. As such, automation is seen as a change process, including practices such as changes in work routines, as well as procurement, development and implementation of IT-solutions. Theoretically, we build on previous research on information systems and e-government in general, combined with theories on stakeholder involvement (Axelsson, Melin & Lindgren, 2013; Flak & Rose, 2005; Rose, Flak & Sæbø, 2018) and public value (e.g., Bannister & Connolly, 2014; Cordella & Bonina, 2012; Rose et al., 2015). The empirical foundation of the project will consist of qualitative and interpretative case studies; see below. The overall design of the project can be separated into three different phases: initiation, case studies; and, synthetization.

We are currently in the initiation phase, which covers the first six months of the project. During this phase we prepare ground for our case studies by conducting theoretical work and inviting practitioners from municipalities to participate in the project. Based on principles of engaged scholarship (Van de Ven, 2007), case studies are defined in close cooperation with practitioners and are typically delimited efforts to automate specific case handling processes (e.g., specific projects). This means that multiple cases can be identified within one municipality. The selection criteria for inclusion of cases in the research project involve that the case must enable analysis of multiple stakeholders' perspectives on RPA uptake and use. We also seek to include cases that cover RPArelated projects in different phases; e.g., during planning, design and implementation, and postimplementation. To date, one of the larger municipalities in Sweden (approx. 160 000 citizens) has signed up to participate in the project and two cases studies have been initiated within this particular municipality; (1) a case study following a project developing RPA solutions for HR processes within the municipality; and, (2) a case study following a strategic initiative to develop automation capacity in the municipality's existing digitalization structures and methods. In addition to these two cases, we are conducting in-depth interviews with consultants working at companies designing and selling RPA solutions and services for the public sector.

During the case study phase, which covers approximately two years of the project (from mid 2020 to mid 2022), we will conduct multiple case studies of various sizes. The exact design of these case studies has not yet been decided, but our work is based on a qualitative and interpretive approach (Myers, 2009; Walsham, 1995), meaning that we are interested in how people interpret and experience automation of case handling processes. Data will be generated through several techniques, including semi-structured interviews, participant observations, document studies and evaluation of IT-systems' design and functionality. The generated material will predominantly be transformed into so-called 'thick descriptions' (Eisenhart & Graebner, 2007), in order to prepare for interpretative analysis (Klein & Myers, 1999). Theoretical contributions will be generated through an abductive approach, in which empirical observations will be continuously related to and intertwined with existing theories and knowledge. This approach enables a deep understanding of

the phenomena at hand and allows for multiple perspectives and interpretations of the material to be created (Myers, 2009).

The final phase of the project covers the last six months of the project and aims to synthetize the findings in (1) in-depth descriptions of the current state of affairs concerning RPA-use for automation of case handling processes in local government (using Swedish municipalities as the empirical examples of local government). We also strive to create (2) an analytical tool that researchers and practitioners in local government can use to decide if, and to what degree, a specific case handling process can/should be automated.

### 5. Preliminary and Expected Results

Our empirical results so far are based on analysis of policy documents on automation of case handling in the Swedish local government context (SOU, 2016; SOU, 2014; SKR, 2018a) and our initial data generated from the two case studies at a large municipality in Sweden. As we are early in the process, the results indicated here must be understood as being preliminary.

Concerning our first research question, our initial findings from the case studies echo many of the challenges reported regarding e-government projects in general (cf. Pollitt, 2012). For the municipality, RPA is a new technology and their initial efforts to understand and implement RPA has highlighted challenges related to e.g., how to understand automation in the municipality context, and how to create interest and commitment in the organization for this type of technological- and organizational development. For example, there are several ongoing initiatives in the municipality, run by members from different departments within the organization, all aiming at increasing efficiency and improving service. These initiatives seem to strive for the same goal, although through different means, e.g., increased efficiency through innovation, through *digitalization*, and now, through *automation*. At present, it is not clear how the projects on automation of case handling fits in the already existing landscape of innovation and digitalization projects; i.e., how the use of RPA is similar to, or sufficiently different from, other innovation or digitalization projects already being conducted in the municipality. As a consequence, projects aiming at automating case handling are currently competing with other similar projects for resources and employees' attention. In order to help members of the organization navigate between different types of IT-projects, employees on the strategic level of the municipality are currently trying to design a new method and process for how to run automation-related projects. We are following the incremental development of this method, as it can deepen our understanding on how employees in the municipality make sense of automation, and how they plan to realize automation in practice.

Concerning the second research question, our initial investigation of RPA implementation in Swedish municipalities indicate that RPA is still more talk than action. Most of the municipalities we have been in contact with during our initial search for suitable case studies are still trying out RPA in small pilot projects. This is also the case for the municipality in which we have initiated the two case studies. In fact, we see indications that RPA use is not as widespread in Swedish local government practice as implied in the general discourse on this technology (e.g. in the media and in collaboration forums for municipalities). It is therefore also too early to see any clear impacts of automation of case handling on municipalities' organizations and output. However, our initial investigation of the pilot projects conducted in the included municipality indicate that RPA is not as easily achieved as the organization hoped. As stated in the introduction, RPA is marketed as an 'easy' way to achieve increased efficiency through systems integration, but the actual procurement and implementation of the RPA applications seems to be the mere tip of the iceberg of work needed to successfully implement RPA for administrative routines in the municipality. In order to automate a process using RPA, a suitable process must first be identified and then thoroughly analyzed and potentially redesigned to fit for automation. The municipality in question does not have a formulated method for this type of analysis yet. Hence, in addition to lacking methods for how to run RPA related projects, the municipality is also lacking ways of identifying what processes are suitable for automation in the first place. Wanting to try out this new and promising technology has therefore set several development initiatives in motion in the municipality, aiming at establishing new ways of working. This organizational development is time consuming and requires collaboration between a large number of stakeholders, making automation using RPA less 'easy' than initially expected.

This is also where our last research question comes in, asking what is required to assess if, and to what degree, a specific case handling process is suitable for automation. On this topic, we do not have results to share yet, as this is a complex question that requires further theoretical and empirical work. The question is kept wide and flexible to allow for this research question to be developed as we gain a deeper understanding of the challenges faced in local government practice (cf. Alvesson & Sköldberg, 2000). As indicated above, we see clear signs of the same kind of determinism and technology optimism in the current discourse on RPA, that we see in other contexts involving new technology in government (cf. Hood & Dixon, 2015). This highlights the need to go beyond the current discourse and explore the consequences of RPA empirically. Previous research also indicate that automation of case handling will bring different value to different stakeholders involved in the process. Using the framework by Rose et al. (2015) will allow us to investigate if conflicting values are at play; e.g., if increased efficiency is achieved at the cost of reduced equity in the case handling process. Based on previous studies of automation in other contexts, there is reason to expect that automating administrative routines will challenge employees' current working life conditions and lead to changes in employees' work content, work situation and skills requirements (cf. Bainbridge, 1983). Based on previous IS and e-government research, we also expect that the implementation of RPA will bring unforeseen consequences for these organizations (Margetts & Hood, 2012). To current date, there are only a few studies that have explored the use and consequences of RPA in the Swedish public sector context (e.g., Wihlborg, Larrson & Hedström, 2016; Ranerup & Henriksen, 2019). We strive to contribute to this body of literature and contribute with accumulated knowledge on what values can be created by automation of case handling processes in local government.

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