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**Front-Line Public Servants' Values and Perceptions of Process Automation in
Administrative Decision-Making: A Qualitative Study in the Social Welfare Sector**

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Summary of Findings

The findings of this study reveal that public servants in social welfare, particularly those in social services and social benefits, prioritize different values in their areas of work, which in turn shape their perceptions of automation. While both groups prioritize transparency and explainability, in the social benefits domain, public servants may put more emphasis on values such as justice and efficiency. Their administrative decisions are typically structured and rule-based, guided by clearly defined criteria and supported by standardized data from integrated state databases. In contrast, public servants in social services may prioritize equality and welfare as they often work with vulnerable client groups facing complex life situations. Their administrative decisions are typically semi-structured or unstructured, varying case by case and rarely following a uniform pattern. Furthermore, their tasks require contextual understanding, human judgment, and interpretation of non-linear information, making human interaction and in-person communication an indispensable part of the service delivery process.

These value orientations may explain how the current and future level of process automation is perceived in both areas. In the social benefits domain, the level of automation is relatively high. Many processes, including eligibility checks and case assessments, are already supported or partially handled by automated systems. The public servants in this domain generally view the current level of automation positively, as it enables faster processing, ensures rule compliance, and minimizes human error. They are open to further expanding the use of automation, particularly when data quality is high, relevant information is digitized, and clients possess the necessary digital literacy and accessibility to effectively engage with automated systems. This openness is linked not only to the structured nature of their work but also to their belief that automation can enhance transparency and fairness by applying consistent rules to all applicants. Notably, despite this openness and optimism, they emphasize the importance of maintaining human oversight.

In contrast, the level of automation in social services remains limited and mostly supportive in the information gathering and provision. Technologies are mainly used for simple administrative tasks or decision support, but core service delivery, particularly client assessment, planning, and communication, remains human-led. Public servants in this area view the current level of automation as appropriate and express skepticism about moving toward higher levels of automation. One specialist and one manager managing both services and benefits commented, “In the case of social benefits, more automation is possible because many evaluations rely on strict and recurring criteria like income or residence. These aspects can be automated more easily than social services requiring individual assessments.”. Their skepticism is based on concerns about losing professional discretion and communication with clients, causing unintentional harm, and the inability of existing systems to interpret complex human contexts, including nuanced verbal and non-verbal cues. These limitations risk undermining the core values they prioritize, welfare, equality, and inclusivity, in favor of values more aligned with automation, such as efficiency, transparency, and explainability. Moreover, the qualitative and unstructured nature of much

of the data in social services, along with the need for inter-agency coordination, presents additional barriers to automation. Public servants in this area argue that automation should remain a tool to assist, not replace, human decision-making, serving as a support system rather than a decision-maker.

Additionally, four key conditions emerged from the data that shape specialists' openness to automation, including inclusivity and trust, privacy and human oversight, system readiness and legal framework, and staff and client capacity. Interviewees also proposed pragmatic use cases for automation, such as chatbots for answering routine questions, image recognition for non-standard documents, and automated communication flows between agencies. These suggestions show a willingness to explore technological support tools, provided they reduce administrative burden without compromising service quality or ethical standards

Content

Figures.....	VI
Tables	VII
Abbreviations	VIII
1 Introduction	1
1.1 Research Problem.....	1
1.2 Research Gap, Motivation, and Research Questions	5
2 Literature Review	9
2.1 Administrative Decision-Making	9
2.2 Business Process Management and Process Automation	10
2.3 Automation of Administrative Decision-Making in Public Services	13
2.4 Values	14
3 Theoretical Framework	16
4 Methodology	20
4.1 Research Philosophy.....	21
4.2 Approach to Theory Development	22
4.3 Methodological Choice and Research Strategy	22
4.3.1 Sampling Strategy	25
4.3.2 Data Analysis	27
4.3.3 Methodology Limitations.....	28
4.3.4 Ethical Reflection	29
5 Sample Description	31
5.1 Overview of Participants	31
5.2 Estonia and Its Welfare System.....	32
5.2.1 Social Insurance Board (Sotsiaalkindlustusamet):	33
5.2.2 Unemployment Insurance Fund (Eesti Töötukassa):	33
5.2.3 Local Municipalities:.....	34
5.3 Denmark and The Danish Agency of Family Law.....	35
5.4 Coding Scheme.....	36
6 Findings.....	38
6.1 SRQ1: What Key Values do Frontline Public Servants Prioritize in Their Work?	38
6.2 SRQ2: What is the Current Level of Process Automation in Their Areas of Work?	43
6.2.1 Social Benefits	44
6.2.2 Social Services	46
6.3 SRQ3a: Perception of the Current Level of Process Automation	48
6.3.1 Process Automation as a Support Tool and an Enabler of Prioritized Values	48
6.3.2 Partial Trust on Automation.....	51
6.3.3 Barriers to Effective Automation	53
6.4 SQR3b: Perception of the Higher Level of Process Automation	54
6.4.1 Preferred Level of Process Automation	55
6.4.2 The Limit of Algorithmic Logic in Handling Complexity and Human Context..	56
6.4.2.1 When Contextual Interpretation and Situational Nuance Matter	57
6.4.2.2 Data Gap, Tacit Knowledge, and The Role of Human Judgement and Expertise	58
6.4.3 Views on Values Prioritized in Areas of Work with a Higher Level of Process Automation.....	60
6.4.3.1 Benefit Group Perspective - Alignment of Higher Level of Process Automation with Prioritized Values	61

6.4.3.2 Service Group Perspective - Misalignment of Higher Level of Process Automation with Prioritized Values	62
6.4.4 Future Aspiration and Conditional Openness Towards a Higher Level of Process Automation.....	65
7 Discussion	68
8 Conclusion.....	76
References	79
Appendix	94

Figures

Figure 1: Classification of Six Ideal Types of Automation by Roehl (2022)

Figure 2: Methodological Approach Based on Saunders et al. (2023)

Figure 3: Coding Scheme

Figure 4: Level of Process Automation in Social Welfare 5-7 Years Ago

Figure 5: Level of Process Automation in Social Welfare Currently

Figure 6: Desired Level of Process Automation in Social Welfare

Tables

Table 1: Dominant View of Process Automation by Toll et al. (2022)

Table 2: Methodological Alignment of Research Questions

Table 3: Overview of Participants

Table 4: Prioritized Values in Areas of Work

Table 5: Values Enabled by Process Automation

Table 6: Alignment of Prioritized Values with a Higher Level of Automation

Table 7: Summary of Findings

Abbreviations

RPA	Robotic Process Automation
ADM	Automated Decision Making
TEHIK	Welfare Information Systems Centre
RIK	Business Register
OTT	AI-powered Decision-Support Tool
STAR	Social Services and Benefits Registry
SKAIS	Social Insurance Board Information System

1 Introduction

1.1 Research Problem

Process automation refers to the use of digital technologies to automate tasks traditionally performed by humans (Parasuraman & Riley, 1997). In the public sector, this typically involves automating administrative procedures, such as handling casework and administrative decision-making, by replacing human agents with software systems. Governments increasingly adopt these technologies in administrative decision-making to improve efficiency and manage increasing workloads with limited resources (Toll et al., 2022). Among the most widely used tools are Robotic Process Automation (RPA) and artificial intelligence (AI), which are central to the ongoing digital transformation of public services (Hindel et al., 2020; Ribeiro et al., 2021).

Unlike in the private sector, public sector automation now attracts more attention due to the integration of self-learning technologies like AI, the digitization of data across decision-making levels, and the broader societal impacts of automation technologies (Marabelli et al., 2021; Rizk & Lindgren, 2024). These developments present unique challenges: governments must balance efficiency gains with their duty to protect citizens from algorithmic harm (Kuziemski & Misuraca, 2020). If not carefully designed, automated systems risk undermining public legitimacy by violating values such as fairness, transparency, and accountability (Rizk & Lindgren, 2024).

Although process automation adoption is often justified by goals of improving efficiency, transparency, compliance, and cost reduction, by eliminating human errors and biases, empirical evidence highlights significant risks and the extent to which organizations can achieve these goals remains debatable. Process automation in government is not only a technical endeavor. Instead, it could bring an ambivalent impact and implications on how the work of public servants is organized and experienced. Although automation promises to streamline routine tasks, its impact on work roles, job satisfaction, organizational dynamics, and the professional discretion of public servants is complex and sometimes paradoxical. In practice, there have been notable failures that underscore the dangers of poorly governed or inadequately designed automation systems. For example, the Swedish employment agency made approximately 70,000 incorrect automated decisions (Rizk & Lindgren, 2024); Australia's Robodebt scandal involved the unlawful issuance of 470,000 debt notices based on flawed automated assessments (Whiteford, 2021); and Dutch childcare benefits scandal saw at least 35,000 parents, many of them from minority backgrounds, wrongly accused of fraud, due in part to algorithmic ethnic profiling (Arts & Van Den Berg, 2025). Contributing factors include inadequate legislation and a lack of shared understanding of what automated decision-making (ADM) entails in practice, despite ongoing regulatory efforts like the EU AI Act and the U.S. executive order on AI.

The study of Lindgren (2024), based on the work of Bainbridge (1983), highlights several "ironies of automation" in public administration. These ironies refer to the paradoxical issues that arise from automation. One such irony is that process automation does not entirely eliminate errors caused by human operators but instead introduces new, unforeseen errors from other areas within the organization (Bainbridge, 1983; Lindgren, 2024). Moreover, automation does not eliminate the need for human involvement; rather, it requires new roles with specialized skills and responsibilities. In particular, process automation technologies like RPA and AI demand competencies in new areas such as monitoring, incident management, algorithm oversight, training, and maintenance, among others. However, these competencies cannot be owned by a single individual.

Consequently, process automation necessitates the involvement of a diverse range of new stakeholders, including policymakers, managers, developers, and legal experts. Each stakeholder brings a unique perspective, which can often conflict and complicate the implementation process (Axelsson et al., 2013; Söderström et al., 2021). Therefore, the difficulty in aligning stakeholder perspectives has been cited as a significant factor contributing to the failure of 30-50% of RPA implementations, underscoring the importance of securing buy-in from all involved parties (Eikebrokk & Olsen, 2020). Interestingly, operators or case workers, who often possess deeper explicit and tacit knowledge of the operational processes than managers and designers, are frequently excluded from the design phase of automation projects (Andersson et al., 2022; Johansson et al., 2023). This exclusion can hinder the effectiveness and acceptance of automation in public administration.

Another irony is that automation does not free up time, which public servants/case workers/operators can now spend on more valuable and meaningful tasks as intended. Alternatively, it transforms the nature of work, reconfigures the work environment and introduces new vulnerabilities. In a study about RPA, Dias et al. (2019) found that the nature of work became more analytical post-RPA implementation, highlighting the shifts in work tasks and knowledge management processes. Staaby et al. (2021) found that while RPA may increase work meaningfulness, it can also lead to more routine tasks, showing the complexity of its effects. While it may eliminate or reduce the time for repetitive tasks, public servants are now required to take charge of monitoring the system, taking over it when there is an issue, or taking a smart part in the process so that blame can be attached to some living entity. Those new or remaining tasks could be meaningless, boring, or too complicated and stressful. According to the recent empirical studies of RPA in Sweden (Johansson et al., 2023; Lindgren et al., 2022), these monitoring tasks have been addressed too late and usually come to operators as a surprise. Therefore, they have no

option but to take more responsibilities that sometimes also go against their will and interest, without proper skills and knowledge (Toll et al., 2023).

Other case studies point to nuanced tensions between automation and frontline practice, many of which indicate that automated systems or algorithms are perceived as less fair and trustworthy than human decision-makers, when making decisions usually thought of as requiring human expertise (Ammitzbøll Flügge et al., 2021; Curry et al., 2017; Devlieghere et al., 2018; Gillingham, 2018; Hansen et al., 2018; Lee, 2018). These perceptions stem from the rigid logic of algorithms, which may fail to accommodate the complexities and nuances of individual cases. Moreover, the automated system also reshapes the relationship between citizens and public institutions, reducing human discretion and shifting street-level to system-level bureaucracy. These changes raised concerns about fairness and inclusion as they may disproportionately affect marginalized groups who often do not fit automated decision criteria (Enarsson et al., 2022; Monteith & Glenn, 2016; Rizk & Lindgren, 2024). Empirical examples further illustrate these issues. Curry et al. (2017) note that experienced social workers reported reduced client contact and time-consuming learning curves, both of which hindered the efficiency and flexibility of their decision-making. Digital tools did not replace in-person contacts because many individuals face complex problems that do not fit into pre-defined algorithms (Hansen et al., 2018). Gillingham (2018) presents managerial insights into a failed child protection technology in Australia, highlighting the importance of aligning system design with service delivery needs.

As a result, some argue that even with advanced digital tools and automation, discretion continues to play a vital role in administrative decision-making (Ammitzbøll Flügge et al., 2021; Kvakic & Larsson, 2024). Devlieghere et al. (2018) reveal that practitioners, via the use of Electronic Information Systems (EISs) in child welfare, frequently face complex dilemmas. Thus they often develop workarounds that can unintentionally undermine the intended transparency of these systems. Similarly, a case study of Hansen et al., (2018) at the Employment Services and the Social Insurance Administration (NAV) in Norway report that while such systems can enhance transparency, social workers routinely adapt them or use alternative communication channels to access missing essential contextual information. Kvakic & Larsson (2024) further show that such technologies not only preserve but also generate new forms of discretion, as caseworkers engage clients via social media and interpret information flexibly when making decisions.

Based on these insights, Ammitzbøll Flügge et al. (2021), in the domain of job placement, emphasize that administrative decision-making is fundamentally collaborative. They highlight practices like shared documentation and team coordination, challenging the view that such decisions are made individually. Their study calls for the development of AI and automated

systems that support, rather than disrupt, these collaborative workflows. Several scholars also argue that the complexity of a task is a key indicator of whether and how AI or automated systems should be applied (Young et al., 2019). Process automation technologies are generally more suitable for routine and simple tasks (Ammitzbøll Flügge et al., 2021; Asatiani et al., 2023; Bullock, 2019; Gormley, 2016; Van Looy, 2022), while human discretion remains essential in areas of uncertainty (Ammitzbøll Flügge et al., 2021; Petersen et al., 2021). Accordingly, Ammitzbøll Flügge et al. (2021) advocate excluding AI from final decision points in complex or sensitive cases, ensuring such decisions stay in human hands.

Subsequently, although process automation offers the potential for improved efficiency and task automation, its implementation often elicits mixed responses from employees, depending on how the technology is introduced and integrated into existing workflows. Emotional reactions such as excitement, fear, and frustration can shape how employees perceive and adapt to automation technologies. Some employees view process automation as a supportive tool or even a ‘teammate’ to reduce mundane tasks and increase productivity, while others see it as a burden, a threat to job security, or an unwelcome disruption to their role (Beaudry & Pinsonneault, 2005; Bhattacharjee et al., 2018; Eikebrokk & Olsen, 2020). These varied responses influence behaviors such as experimenting with new technologies, delaying adoption, or even resisting the change altogether by developing workarounds or rejecting the technology outright (Stein et al., 2015). According to Gödöllei & Beck (2023), much of the current research disproportionately focuses on job insecurity as the primary employee response to automation. Yet, research on employee perceptions of automation has frequently confounded automation-related job insecurity with perceived automatability, the assessment of whether one’s tasks can be automated, which is a technological evaluation rather than a reflection on personal outcomes. Furthermore, existing studies have mainly emphasized pessimistic attitudes towards automation. In particular, job insecurity is a common theme (Brougham & Haar, 2018; Koen & Parker, 2020; Shoss & Ciarlante, 2022), although some people may also react optimistically to automation (Asatiani et al., 2020). Among the limited studies exploring these nuances, Asatiani et al. (2020) examine reactions to RPA in the pre-implementation phase, revealing both positive and negative responses. Seiffer et al., (2021), in a literature review comparing employee responses to software robots versus traditional IT conduct, identify a range of affective, cognitive, and behavioral reactions. While some responses overlap with traditional IS, others appear unique to software robots, shaped by distinct contingency factors. Finally, Waizenegger & Techatassanasoontorn (2022) further differentiate employee experiences by outlining four distinct response configurations, ranging from seeing it as a burden or threat to considering it as a useful tool and enabler of innovation, shaped by individual perceptions of software robots, affecting collaboration and behavioral outcomes. Despite such contributions, little is known about the conditions under which employees

form these opposing perceptions (Gödöllei & Beck, 2023). That leads to another key challenge with process automation is managing the differing attitudes between employees who embrace the new technology and those who resist it. This dichotomy also highlights the importance of understanding the emotional and psychological responses of workers during the implementation process.

In addition to individual employee reactions, successful implementation of process automation requires an understanding of how different groups within the organization, interact with the technology. While some departments benefit from the automation of repetitive tasks, others, such as the IT department or front-line case workers, may experience increased workloads or face new vulnerabilities due to system limitations or misconfigurations (Hofmann et al., 2020; Lindgren, 2013; Syed et al., 2020; Toll et al., 2022). Curry et al. (2017) found that experienced social workers viewed a web-based referral system more negatively than less experienced ones. A study on stakeholder views of process automation in a Swedish municipality revealed differing perspectives based on stakeholder roles. While managers and policymakers were generally optimistic, IT departments and operational staff showed undecided or pessimistic views regarding RPA's role in achieving value-based goals (Toll et al., 2022). The research highlights the diverse priorities of different groups within the municipality, offering insight into why these perspectives diverge. Therefore, the benefits of automation are often unevenly distributed, depending on organizational roles and departmental functions. As a result, organizations must carefully manage automation projects by considering both technical and human factors, ensuring that the technology is aligned with employees' skills and expectations (Wessel et al., 2021). Without addressing these challenges, automation implementations may fail to achieve their full potential, leading to dissatisfaction and reduced productivity among employees.

1.2 Research Gap, Motivation, and Research Questions

The discussion above has shown how automation is reshaping work configurations and transforming the roles of employees who interact with these technologies. This underscores the importance of designing automation systems that are not only technically effective but also responsive to the specific needs of employees and characteristics of their different types of work. Despite growing interest in knowledge-intensive work automation (Salovaara et al., 2019) and the increasing use of process automation, in particular RPA and AI, existing literature predominantly focuses on organizational benefits, best practices, and provides guidelines for successful implementation or governance of emerging automation technologies (Aguirre & Rodriguez, 2017; Plattfaut, 2019; Syed et al., 2020; Waizenegger & Techatassanasoonorn, 2022). Whereas, empirical studies on how employees, especially knowledge workers, perceive and respond to the introduction of process automation tools to their work remain sparse (Asatiani et

al., 2020; Seiffer et al., 2021; Staaby et al., 2021). Even fewer studies address how automation affects different employee groups and work roles in terms of identity, discretion, or job value (Germundsson, 2022; Veale & Brass, 2019; Wihlborg et al., 2016). Notwithstanding, most of the currently available studies that assess the impact of process automation technologies such as RPA on employees often rely on insights from project teams, management, or vendors (Eikebrokk & Olsen, 2020; Ratia et al., 2018; Vitharanage et al., 2020), leaving employee perceptions underexplored. This narrow lens risks oversimplifying or misrepresenting the nuanced and sometimes ambivalent reactions of employees to automation in their everyday work.

On the other hand, while a substantial body of research has investigated when and why people trust, and subsequently adopt technologies at work (e.g., Glikson & Woolley, 2020; Hancock, 2014; Langer & Landers, 2021; Parasuraman & Riley, 1997), only a small subset focuses on understanding employees' general perspective on automation (Gödöllei & Beck, 2023). Within this subset, Gödöllei & Beck (2023) highlight an ongoing debate about the conditions shaping employee responses to automation: while much of the literature emphasizes negative responses with job insecurity as the dominant factor, a few studies, such as Asatiani et al. (2020); Seiffer et al. (2021), and Waizenegger & Techatassanasoontorn, (2022) suggest employees may have mixed reactions, including optimism, depending on how they perceive the automatability of their tasks. Thus, Gödöllei & Beck (2023) call for further empirical work to understand the conditions under which these opposing perceptions arise.

This gap is even more significant in the public sector, where research on the impact of digitalization and automation technologies such as RPA and AI on frontline casework remains underdeveloped (Ranerup & Henriksen, 2019). A few studies have examined how digital tools influence case management and administrative decision-making, particularly in public services, yet empirical evidence remains sparse. For instance, some have examined public sector automation in Nordic countries (e.g., Dias et al., 2019; Lindgren, 2013; Lindgren et al., 2021, 2022; Ranerup & Henriksen, 2019; Toll et al., 2022, 2023; Wihlborg et al., 2016), but typically within narrow national or municipal scopes and focusing on RPA technology specifically. Beyond the Nordic region, some contributions from Curry et al. (2017), Hansen et al. (2018), Gillingham (2018), and Devlieghere et al. (2018) provide additional useful insights. Collectively, these studies point to a critical gap in understanding the complex and value-laden interactions between public servants and process automation technologies.

Overall, there is a critical need for more grounded, context-sensitive research that investigates how automation influences and shapes public sector work, not just in terms of task execution, but also in how workers perceive the shift in boundaries of technological and human agency, their roles, discretion, and professional identities (Ranerup & Henriksen, 2019; Veale & Brass, 2019;

Wihlborg et al., 2016). Most importantly, more studies are needed that center employees' perspectives and experience, rather than viewing them merely as sources of resistance to technological change (Staaby et al., 2021).

In response to this call, our study aims to investigate the perceptions of public servants in the front-line units of process automation and automation technologies such as software robots or automated decision-making for welfare provision. The paper focuses on the context of social welfare, covering both social services and benefits, where digitalization and automation are increasingly introduced. This area is particularly sensitive and provides an interesting context for studying automation because it involves direct interaction with clients who are often vulnerable (Minas, 2014; Ranerup & Henriksen, 2019). Also, it requires a high degree of individual and professional discretion (De Boer & Raaphorst, 2023; Lipsky, 2010). These conditions raise the risk of potential tensions between human and machine agency in the context that, in recent years, IT systems have increasingly taken over administrative decision-making tasks, either partially or fully, from street-level bureaucrats. As a result, traditional street-level bureaucracies have evolved into screen-level bureaucracies (Bovens & Zouridis, 2002; Roehl, 2022; Young et al., 2019). Social welfare is also a domain where automation failures can have serious consequences for clients, as shown in the work of Arts & Van Den Berg (2025); Rizk & Lindgren (2024); and Whiteford (2021). These cases underscore the importance of applying automation in a cautious, context-sensitive manner that considers the ethical, social, and practical implications for both public servants and citizens.

The study is guided by the following main research question: *How do frontline public servants in social welfare perceive the use of process automation to support administrative decision-making in their areas of work?*

This is further explored through three sub-questions:

- *SRQ1: What key values do frontline public servants prioritize in their work?*
- *SRQ2: What is the current level of process automation in their areas of work?*
- *SRQ3: How do they perceive and respond to automation technologies, such as automated decision-making systems and software robots, in relation to those values?*

In this study, the Author use a qualitative approach and adopt values as a lens to examine the perceptions of public servants because values reflect underlying purposes and motivations that are more stable and deeply rooted than project goals (Rose et al., 2015). In the context of process automation, often involving multiple stakeholders with differing values, conflicts of values can

emerge, and different organizational groups may perceive experience automation in distinct ways. Therefore, understanding the values of public servants is essential for aligning priorities, mitigating tensions, and fostering coordination (Rose et al., 2015, 2018). Moreover, we also attempt to discover the level of process automation in the specific areas of work of public servants. This helps contextualize their perceptions and provide a better understanding of how they react in a certain way. That is because automation levels may vary between service areas (e.g., social services vs. social benefits), and the familiarity with digital technologies might influence how individuals perceive and interact them (Kaun & Masso, 2025; Masso et al., 2024). Finally, the setting of the study is in Estonia and Denmark due to their recognized high level of digitalization of the public sector. This setting increases the likelihood of encountering public servants who are familiar with process automation technologies, thereby allowing for the collection of richer and more nuanced insights.

The structure of this paper is as follows: Chapter 1 – Introduction, synthesizes existing research and discusses in-depth the challenges and implications of adopting process automation, particularly within the public sector. This chapter also identifies gaps in the current literature and justifies the need for this study and presents the main research question. Chapter 2 – Literature Review provides an overview of key concepts, including administrative decision-making, process automation, process automation in administrative decision-making in the public sector, and values, offering foundational knowledge necessary for understanding the topic. Chapter 3 – Theoretical Framework introduces the conceptual lens and relevant theories used to guide the analysis and address the research questions. Chapter 4 – Methodology outlines the research design following the Saunders research onion model (Saunders et al., 2023), detailing the methodological steps taken. Chapter 5 – Sample Description presents the background and relevant work characteristics of the interviewees, drawn from social services and social benefits roles. Chapter 6 – Findings presents the results of the data collection, organized around the research questions and emergent themes. Chapter 7 – Discussion interprets the findings in light of existing literature, explores theoretical and practical implications. Finally, Chapter 8 – Conclusion summarizes the key takeaways and contributions of the research.

2 Literature Review

This chapter introduces the concept of administrative decision-making and its various categories, providing a foundation for understanding how decisions are made within public sector organizations. Following this, the concepts of Business Process Management (BPM) and process automation are presented. The inclusion of BPM is essential, as process automation does not occur in isolation; rather, it is part of a broader organizational effort to manage, optimize, and transform business processes. Automation initiatives—particularly those related to administrative decision-making—are often implemented to streamline or redesign workflows. Therefore, a foundational understanding of BPM is necessary to fully grasp the organizational logic and structural transformations that underpin automation in public service delivery. The chapter then examines how process automation is applied in the public sector, particularly in the context of service delivery. It explores the practical use of automation, the overlapping and interrelated nature of key concepts, and the challenges associated with implementing automation in this domain. Subsequently, the concept of values is introduced, along with a justification for its relevance in this study.

2.1 Administrative Decision-Making

Administrative decision-making is a routine activity in public sector bureaucracies, involving numerous public servants across all levels of government worldwide (Roehl, 2022). The term public or civil servant encompasses specialists, case managers, case workers, social workers, and others responsible for making administrative decisions (Roehl, 2022). This process can be perceived as the unilateral determination of what is lawful in specific cases, based on case attributes, relevant statutory regulations, and their impact on individual citizens, firms, or groups (Stelkens, 2020). Such determinations are made through formal decisions, administrative acts, or adjudications by public administrative bodies.

Although often seen as structured and authoritative (Weber, 2013), modern research portrays public servants as supporters of equality in treatment, openness, impartiality, and predictability in decision-making (Christensen & Lægreid, 2018). Bureaucratic decisions, while often viewed as systematic and sometimes slow and burdensome, are associated with a high level of transparency, compliance with procedures, and transparency (Lipsky, 2010; March, 1994; Tummers & Bekkers, 2014). Discretion is generally viewed positively, though not without criticism (Ranerup & Henriksen, 2019). These decisions and professional activities are also influenced by and based on organizational values that are promoted to guide public employees (Rose et al., 2015).

Administrative decision-making includes a wide range of activities: some beneficial to the recipients (e.g, the decision to grant a particular service or benefits) and some restrictive (e.g, denial of construction permission, or halt of the provision of a service/benefit if a person is deemed no longer eligible). While some decisions are not particularly significant, some might have serious consequences for a particular stakeholder, for example, the eligibility for social security benefits of a person (Roehl, 2022). What distinguishes administrative decision-making in the context of automation in the public sector is the legal framework that governs it. Such decisions occur within a structured procedural and legal framework, guided by administrative legislation and standards of good governance. These emphasize key principles such as due process, contradictory procedures, accountability, the obligation to provide reasons, equal treatment, and proportionality (Bell, 2019; Roehl, 2022).

An administrative decision can be categorized into 3 types: highly structured, semi-structured, and highly unstructured. Structured decisions are for routine or repetitive issues for which solutions are straightforward and well-known. Whereas, unstructured decisions are unclear and characterized by no uniform or obvious solutions. Semi-structured decisions are somewhat in between, where some but not all elements are structured (Averweg, 2008; Roehl, 2022). According to Simon (1960), administrative decisions follow 3 generic phases, and they are different from each other in terms of complexity across the 3 phases. First, in the intelligence phase, relevant data is collected and evaluated. Next, in the design phase, possible options or courses of action are developed. Finally, in the choice phase, a specific option is selected and communicated. These phases are not strictly linear, as they can be more or less formalized.

2.2 Business Process Management and Process Automation

Business Process Management (BPM) is a multidisciplinary approach aimed at continuously improving an organization's efficiency and effectiveness. It involves a set of practices that encompass the modeling, automation, execution, monitoring, and optimization of business processes. BPM enables organizations to take a holistic view of their operations, linking workflows, information systems, and people across internal departments and external partners (Chakraborti et al., 2020; Moreira et al., 2023). Due to the evolution of changing context, Wewerka & Reichert (2023) highlight the necessity of BPM in the business process digital lifecycle that takes into account all its actors and information systems. In particular, business processes should be effective, cost-efficient, and adaptable. It has become essential for organizations navigating dynamic environments, helping them adapt, reduce operational costs, and enhance service delivery. BPM can be adopted in numerous areas present in the organizational structure (Moreira et al., 2023). Despite BPM broad spectrum of use in the business area and the processes eligible for adoption, it is always essential to check its adaptability,

suitability, and the return that comes from this change, since this adoption can translate into a paradigm shift in the way the business works (Moreira et al., 2023). Currently, new and disruptive technologies that relate to BPM provide new ways of working, affect human work, and reshape the human-robot relationship and configuration in the organization (Stravinskienė & Serafinas, 2021). They include, but are not limited to Robotic Process Automation (RPA), Artificial Intelligence (AI), IoT, process mining, reality virtualization, and 4D printing (Ahmad & Van Looy, 2020; Stravinskienė & Serafinas, 2021).

Process automation, as a core component of BPM, has been defined and interpreted in various ways. Lazareva et al. (2022) and Lindgren (2024) trace the concept of automation back over a century, highlighting that although modern automation is seen as innovative, the concept of automation itself is not new, and the underlying mission has always been to reduce human intervention in processes. In the past, automation was often mechanical and focused on manufacturing. It was described as self-regulating electronic equipment to make a production system or process run faster, with little or no human intervention. Nowadays, automation is no longer limited to hardware, but it now includes software-driven decision-making and task execution due to the extensive advancement and proliferation of a wide range of technologies such as AI, data mining, and advanced analytics (Groover, 2010). As a result, the goal, technological configuration, and implementation of this type of automation deviates from its original version. Subsequently, the definition itself becomes more sophisticated by including human intervention, pre-determined criteria for decision-making, sub-process relationships, and related actions (Lazareva et al., 2022). In particular, automation still refers more generally to the machine execution of tasks that humans either do not want to do or cannot do with the same level of consistency or precision (Parasuraman et al., 2000). However, as automation becomes more embedded in organizational life, its scope has expanded beyond business process automation to include IT automation, home automation, personal productivity tools, and more (Lazareva et al., 2022). Beyond automating routine decisions and intellectual tasks, automation nowadays also targets complex business processes that have become targets for automation (Gartner, 2020; Lazareva et al., 2022). These developments position automation not merely as a technical upgrade but as a transformative force redefining how businesses operate and compete. The focus now is to proactively run the business rather than count the business, and achieving process autonomy is considered a goal of process automation and which requires more complex algorithms for managing process automation (Lazareva et al., 2022). On the other hand, Vu et al. (2023) define process automation as the act of assigning at least one task or a control flow link between tasks to a machine. Silveiras et al. (2024) describe process automation as a form of organizational and technological change that brings about a hybrid work environment—one where software tools, business rules, and human skills are blended to execute and oversee workflows and process

particular data. Similarly, Mazilescu et al. (2019) present business process automation and robotisation (BPA/R) as a broader concept that integrates automated decision-making, software robots, and complex data processing within business flows.

The value of process automation lies in its ability to enhance operational efficiency, reduce manual effort, and minimize the likelihood of human error. According to Chakraborti et al., (2020), organizations adopt automation to lower operational costs, speed up routine tasks, and free employees to focus on higher-value work. Automation becomes especially valuable in complex environments where structured processes coexist with more ad hoc, human-driven interactions. This view is shared by Moreira et al. (2023), noting that process automation has become a priority for organizations seeking resilience and scalability to remain competitive. In fact, Gartner (2020) predicted that by 2022, 90% of large enterprises would adopt process automation technologies to cope with the increased digital demands to deal with the complexities brought about by the COVID-19 pandemic.

To understand the scope and impact of automation, Parasuraman et al. (2000) categorized four types of automation based on the nature of the tasks involved. First, information presentation automation includes tools that generate real-time dashboards and reports to visualize operational data. Second, information processing automation involves technologies that analyze large volumes of data using methods like machine learning and natural language processing. Third, decision automation uses decision-support systems and AI to provide recommendations or make choices based on predefined logic. Finally, physical automation includes the use of robots or autonomous systems in manufacturing and logistics. It is important to note that these types are not mutually exclusive, a single automation system may incorporate several of these functions simultaneously, depending on its design and purpose. Numerous technologies support and extend the capabilities of process automation in contemporary organizational settings. Information systems can be understood as a specific class of machines designed to perform tasks traditionally carried out by humans. In practice, control flows are often automated through enterprise systems, workflow management systems, or robotic automation tools (Dumas et al., 2018). These systems range from simple tools, such as calculators, to advanced technologies like artificial intelligence (AI) and machine learning (ML), which can adapt to data patterns and make autonomous decisions (Vu et al., 2023).

Robotic Process Automation (RPA) is a popular tool that mimics human actions in digital environments, such as copying data between systems or sending automated emails (Lazareva et al., 2022; Söderström et al., 2021; Toll et al., 2023). AI and machine learning offer more advanced capabilities, allowing systems to adapt and make decisions based on data trends (Vu et al., 2023). Process mining, as part of BPM, helps organizations discover inefficiencies and identify

automation opportunities by analyzing the process backlogs (Moreira et al., 2023; Rinderle-Ma & Mangler, 2021). Additionally, technologies like blockchain, Internet of Things (IoT), virtual and augmented reality, and even 4D printing are increasingly contributing to the expansion of automation across industries.

2.3 Automation of Administrative Decision-Making in Public Services

Organizations in the public sector are increasingly using process automation technologies to automate and streamline processes to achieve a higher level of efficiency. In this context, the term "process" refers to public administration processes, with a particular focus on case-handling processes, which often involve automated decision-making (ADM) (Goldkuhl, 2022). The utilization of digital technologies and AI to automate a full or part of decision-making processes paves the way for increased adoption of ADM in public service delivery (Rizk & Lindgren, 2024). ADM refers to the use of algorithms or systems to process data and either make decisions or assist human decision-making (Marabelli et al., 2021; Rizk & Lindgren, 2024). Also, it encompasses three elements: the decision, the process of decision-making, and the data and the technology that facilitate it (Elgendy et al., 2022).

In the public sector, ADM is increasingly used to automate administrative decisions through a wide range of digital technologies. These systems might include rule-based (expert) models, regression, machine learning, neural networks, big data, and predictive analysis (Busch & Henriksen, 2018; Janssen et al., 2022; Roehl, 2022; Wang et al., 2023). As technology advances, the adoption of digital technologies for automation in administrative decision-making has grown worldwide. ADM can operate at varying levels of automation—from low levels where digital tools support specific tasks (e.g., information display or analysis) to fully automated processes that require minimal human involvement (Barysé & Sarel, 2024).

In the academic literature, technologies such as robotic process automation (RPA) and ADM are often treated as distinct concepts. RPA typically refers to rule-based software robots that automate repetitive administrative tasks, while ADM involves more complex, data-driven decision logic. However, in practice, especially when examining front-line public service delivery, these technologies may overlap or coexist within the same workflows. To reflect this complexity and avoid prematurely narrowing the scope, this study adopts *process automation* as an umbrella term. This broader concept includes not only RPA and ADM but also other emerging automation technologies that may influence public servants' daily tasks. Drawing from Mazilescu et al. (2019), who describe business process automation and robotisation (BPA/R) as integrating ADM, software robots, and complex data processing within organizational flows, this study uses the term *process automation* to capture the full spectrum of automation levels present in front-line

administrative work. The automation of administrative decisions in the public sector has gained momentum in response to increasing pressure from aging populations, budget constraints, and the need to process high volumes of cases in areas such as taxation, healthcare, and social benefits (Monarcha-Matlak, 2021). Public administrations are expected to make faster and more complex decisions to meet evolving citizen demands.

2.4 Values

Values are complex constructs that can be understood in different ways. The word "value" can function both as a noun (a thing, such as a principle or belief) and as a verb (an activity, an act of assigning importance) (Masso et al., 2024).

Value refers to the “worth, utility, or importance of an entity” (Esteves & Joseph, 2008). It is regarded as intrinsically desirable—something deemed good and worth striving for without requiring further justification (Sikula, 1973), making it a subjective phenomenon. Values can serve as ends-in-view, which means that they are guiding principles or superordinate goals that inform decisions and frame behaviors (Dewey, 1939). Also, they function as criteria for evaluation, continuously shaped and redefined based on the outcomes of those activities (Dewey, 1939). On the other hand, values can be desirable goals or what are ideals that individuals strive to achieve, and because they do not exist just as abstract ideals but also drive behaviors, values also serve as motivational constructs (Dewey, 1939; Schwartz, 1994). They are closely associated with perceptions and emotions, often organizing into a hierarchical system of priorities (Schwartz, 1994). They go beyond specific actions and serve as guiding principles for selecting and evaluating actions, policies, individuals, and events (Dewey, 1939; Rose et al., 2015; Schwartz, 1994).

In the context of public administration and e-Government, values are also described as normative modes of behavior, generally regarded to be right, and they are believed to form the foundation of all transformative processes (Bannister & Connolly, 2014). Values were assumed to be congruent in that they form a unified, coherent, and synergistic platform that is definable (Rose et al., 2015). However, recent literature argued that values in public administration are often plural, ambiguous, hybrid, and overlapping. That mirrors the complexity of the governance systems that integrate multiple stakeholders with potentially conflicting goals and consequently value systems (Van Der Wal & Van Hout, 2009). In hybrid organizations—operating across both public and private sectors—stakeholder groups often hold inherently incompatible value systems. As a result, values can be contradictory and conflicting (Rutgers, 2008). Furthermore, the values that individuals or organizations claim to hold might not necessarily align with the values that

actually guide behavior in practice (Rose et al., 2015). That makes empirical validation challenging and makes value seem more divergent than congruent.

Additionally, values are socially produced and relational. The dual nature of values implies that values are not just something inherent in an object (like an AI system) but also something socially produced and relational (Masso et al., 2024), shaped by individual and collective experiences with technologies like AI and automation tools (Bolin, 2016). It is assumed that people's understanding of technologies usually shapes attitudes, beliefs, and the level of trust or fears regarding the emergence of new technologies such as AI. However, it is argued that their perceptions of publicly formulated values principles with regard to AI might also constitute values that motivate people to act in a specific direction (e.g. to design, use, and interact with technological artefacts) (Masso et al., 2024).

Values demonstrate underlying purposes and motivations that are more consistent and deeply entrenched than project goals (Rose et al., 2015). Thus, it is imperative to carefully coordinate and align stakeholders' priorities and goals. To achieve this, learning about values incorporated within perceptions of IT projects can inform their superordinate goals, regardless of what is written in the project description for political ends. Recognizing the presence of competing value positions is crucial for grasping the complex accountability structures and the plurality of stakeholders involved in digitalization projects (Ranerup & Henriksen, 2019; Rose et al., 2015). Furthermore, gaining insight into the fundamental values of those involved is essential for developing strategies to communicate and manage these values effectively. Doing so can help manage conflicts or tensions between values and, ultimately, contribute to the success of the project (Rose et al., 2015, 2018).

3 Theoretical Framework

In this study, several theoretical and conceptual frameworks will be utilized as analytical lenses to guide and support the interpretation and analysis of empirical data and directly address the research questions. These frameworks are selected based on three main criteria: (1) Their relevance to the public sector context, particularly concerning process automation, values, and administrative decision-making; (2) their capacity to support the exploration of individual-level values and stakeholders perspectives; (3) their empirical grounding or demonstrated applicability in previous studies. Each framework contributes to answering specific research questions as illustrated below

First, to answer the *SRQ1: What key values do frontline public servants prioritize in their work?* and *SRQ3: How do they perceive and respond to automation technologies, such as automated decision-making systems and software robots, in relation to those values?*, the Author adopts the perspective of values as attitudes as a lens to examine the perception of public servants towards process automation. Values as attitudes focus on individual-level evaluations, such as how much a person values something, how they feel about it, and how likely it is to guide their behavior. This aligns with expert literature that sees values not only as abstract ideals or societal norms, but as motivational guiding principles that shape behavior and decision-making in specific contexts (Dewey, 1939; Schwartz, 1994). While scholars have defined values in multiple ways, such as moral beliefs, social norms, or institutional rules, this study emphasizes values as subjective, motivational constructs: things people care about, use to evaluate situations, and that influence their actions in their work. Drawing from recent work such as Masso et al. (2024), this study adopts the view that values are not just fixed principles (e.g., privacy, fairness), but contextual, dynamic, socially negotiated understandings that can be measured empirically. Recognizing that values are relational and socially constructed, this approach allows for flexibility in how values are expressed, either desired goals or preferred means, and how they vary across contexts and individuals.

This study also refer to the list of value items developed by Masso et al. (2024), who conducted a comprehensive review of prior research on human values, public values, and moral values in relation to AI. From this synthesis, they identified 15 value items: *efficiency, privacy, diversity, justice, equality, accountability, transparency, security, welfare, sustainability, monitoring, solidarity, explainability, autonomy, and interoperability*. While many of these values are commonly referenced in AI ethics guidelines (e.g., efficiency, privacy, justice), the study provides a more balanced perspective by also incorporating values that are less frequently emphasized in AI discussions or drawn from other domains, such as welfare and sustainability. Masso et al. (2024) further categorized these values into four broader types: protection of personal interests to

ensure social benefit, general monitoring to ensure universal solidarity, social diversity and sustainability, and efficiency. Their study empirically assessed how these values are perceived by citizens in relation to AI, data analysis, and algorithms, using representative surveys in Estonia, Germany, and Sweden. It measured the extent to which citizens recognize these values as being embedded in the development and public discourse of artificial systems, as well as their visibility in evaluation criteria and policy guidelines. The findings reveal that while some values are more universally shared across countries and individuals, others may be more context-specific, depending on national, sectoral, or personal factors. Importantly, this study also identified a set of values that are robust across cultures, which can help explain potential conflicts in values when designing and implementing AI systems in diverse contexts. Given the depth, relevance, and empirical grounding of this work, and its applicability to AI as a key enabler of automation, the value list developed by Masso et al. (2024) is used in this study to support and guide discussions with participants. This is particularly helpful in navigating the abstract nature of the concept of “values,” which can often be difficult for participants to articulate without reference points.

Second, to answer the *SRQ2: What is the current level of process automation in their areas of work?* The study uses the classification of six ideal types of automation by Roehl (2022). According to Roehl (2022), there are 6 ideal types of automation in administrative decision-making, ranging from Minimal automation to Autonomous decision. They are, namely, Minimal automation (type A), Acquisition and presentation of data (Type B), Suggested procedural steps (Type C), Supported decisions (Type D), Automated decisions (Type E) or Autonomous decisions (Type F). Each type depicts the configuration of discretion between civil servants and the algorithmic systems. This framework provides a more nuanced understanding of automation levels beyond the binary classification of semi, fully, and no automation by differentiating the broad notions of semi-automated (Type A,B,C,D) and fully automated decision-making (E,F) in the literature.

Given that participants in this study come from diverse social welfare domains, each of them could have a different level of automation in administrative decision-making, this framework enables the researcher to better capture and position the scope and the variation within these cases. It also guides the analysis of how these configurations influence perceptions, professional roles, and value alignment. The classification is illustrated below in Figure 1.

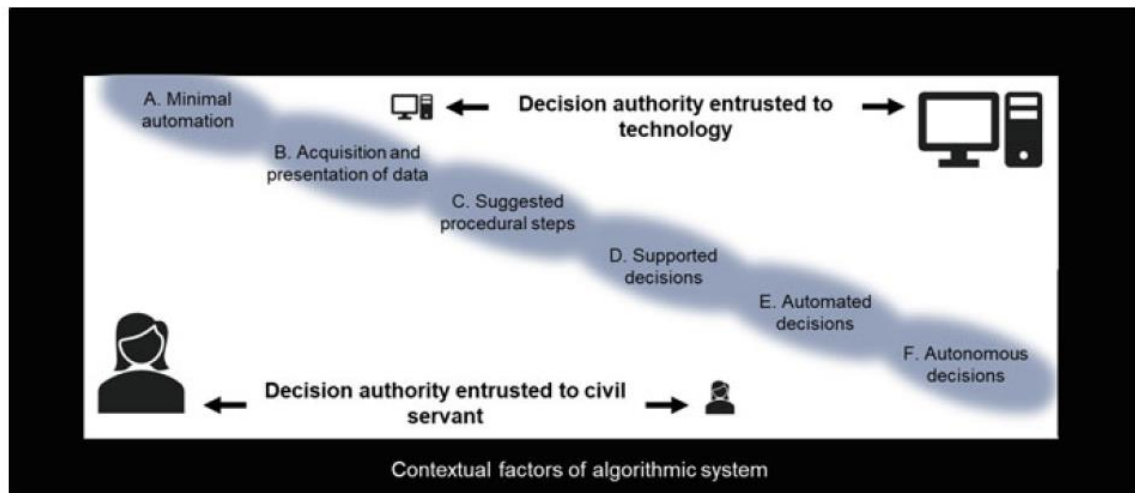


Figure 1: Classification of Six Ideal Types of Automation by Roehl (2022)

Briefly, minimal automation (Type A) means public servants hold significant discretion and authority within a wider algorithmic system. Decision-making may be supported with simple technologies such as word processing, written standards, etc. From Type B to Type D, public servants and technology start to share decision authority but at different levels. In Acquisition and Presentation of Data (Type B), automated technologies collect, register, and present some or all data relevant to the case as supplementary information. The remaining tasks belong to the public servants. In Suggested Procedural Steps (Type C), the technologies, besides collecting and presenting data, also suggest appropriate procedural steps, and the remaining tasks belong to the public servants. In Supported Decisions (Type D), the technologies, besides the already mentioned tasks, suggest a narrow range of decisions or a specific decision for public servants to consider and decide. From Type E to Type F, technologies start to have primary decision authority. In Automated Decisions (Type E), all aspects of the decision are performed automatically by the technology within static, explicit input-output relations with little to no support from public servants. Autonomous Decisions (Type F) share the same similarities, but the decisions are based on implicit input-output relations (using unsupervised learning techniques) (For more details, please see Roehl (2022)).

Finally, to address SRQ3: *How do they perceive and respond to automation technologies, such as automated decision-making systems and software robots, in relation to those values?* this study draws on the framework developed by Toll et al. (2022) as a reference point. Their work, which shares a similar focus on stakeholder perceptions and value orientations in the context of process automation, provides a useful comparative lens for interpreting the findings of this study. In the study, stakeholder theory and the model of value ideals are employed. The stakeholder theory focuses on the idea of identifying and managing stakeholders in various ways to ensure efficient

and effective governance within an organization (Freeman, 1984). A stakeholder is identified as an individual or a group of people who can influence or be influenced by the execution and achievement of organizational objectives (Freeman, 1984). Furthermore, they can be identified and characterized in many ways (Lindgren, 2013). Stakeholder theory is highly effective for examining and analyzing the diverse range of actors involved in e-government projects, as evidenced by its successful application in the public sector and e-government contexts (Flak et al., 2008; Rose et al., 2018). The model of value ideals comprises 4 public value ideals, namely Professionalism, Service, Efficiency, and Engagement (Rose et al., 2015). The work of Rose et al., (2015) presents a theoretically grounded model of public value, and its insights have been utilized in various studies with strong explanatory power (Toll et al., 2022). By combining those 2 theories, the study of Toll et al. (2022) aimed to firstly, examine stakeholder perspectives towards process automation and secondly, connect these views to the key values relevant to their respective different areas of work. It is a case study in only one Swedish Municipality. The overview of the findings is illustrated below in Table 1 below.

Table 1: Dominant View of Process Automation by Toll et al. (2022)

Stakeholder group	Stakeholder role(s)	Value ideals prioritized in their area of work	Dominant view of process automation as an enabler of prioritized value ideals
The Digitalization Group	Champions	Efficiency	Optimistic
IT Department	Suppliers Project managers Operators	Professionalism	Undecided
Support Functions	Clients Sponsors Operators	Professionalism Service	Optimistic
Operational staff	Clients Sponsors Operators	Engagement Professionalism Service	Pessimistic

The findings show that the adoption of process automation necessitates the creation of new structures, roles, and responsibilities. Furthermore, different stakeholder groups within local government will prioritize different values, depending on their specific areas of work. This prioritization, subsequently, determines their views on process automation, resulting in distinct dominant views across groups (Toll et al., 2022). The Author will refer to the classification of different stakeholders of this study to identify the target for recruitment, which will be described in section 4.3.1 below. Further, the Author also aim to validate our findings with these frameworks to assess whether the results align or differ across different cultural, organizational, and administrative contexts.

4 Methodology

This chapter discusses the research methodology adopted in this study. The structure follows the "research onion" framework proposed by Saunders et al. (2023), which served as a guiding tool throughout all stages of the research design and execution. The model comprises six interrelated layers: (1) research philosophy, (2) approach to theory development, (3) methodological choice, (4) research strategy, (5) time horizon, and (6) techniques and procedures. Each layer represents a set of decisions that influence the overall coherence and quality of the research. Such a systematic and layered approach to methodological decision-making is expected to support researchers in articulating and justifying their choices. Consequently, the researcher is able to ensure that the methodology is philosophically grounded, methodologically sound, and practically feasible. An overview of the research onion and its layers as applied in this study is illustrated in Figure 2 below.

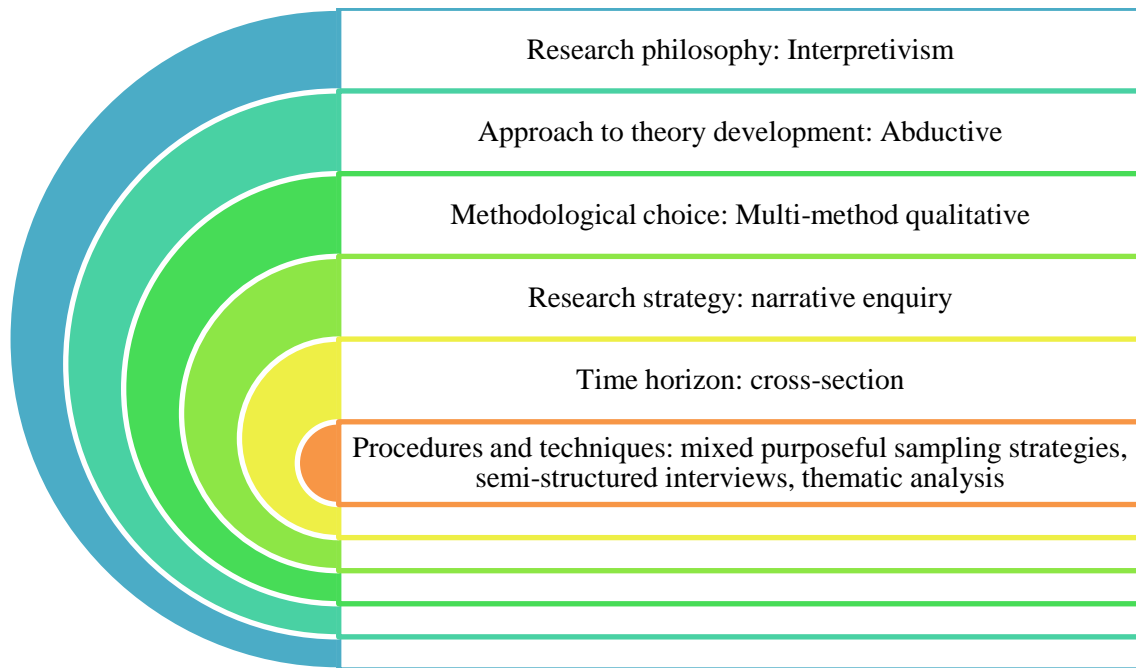


Figure 2: Methodological Approach Based on Saunders et al. (2023)

The link between the research questions and the methodological choices is summarized in the Table 2 below and will be discussed in more detail in the following subsections.

Table 2: Methodological Alignment of Research Questions

Research question: How do frontline public servants in social welfare perceive the use of process automation	Research philosophy	Approach to theory development	Methodology choice	Research strategies and techniques

to support administrative decision-making in their areas of work?				
<i>SRQ1: What key values do frontline public servants prioritize in their work?</i>	Interpretivism	Abductive (refer to the categorization of public values by Masso et al. (2024))	Multi-method Qualitative, expert interview	Semi-structured interview, elicitation techniques
<i>SRQ2: What is the current level of process automation in their areas of work?</i>	Interpretivism	Deductive (six ideal types of automation by Roehl (2022))	Multi-method Qualitative, expert interview	Semi-structured interview
<i>SRQ3: How do they perceive and respond to automation technologies, such as automated decision-making systems and software robots, in relation to those values?</i>	Interpretivism	Abductive (refer to the framework proposed by Toll et al. (2022))	Multi-method Qualitative, expert interview	Semi-structured interview, projective and elicitation techniques

4.1 Research Philosophy

According to Saunders et al. (2023), there are five key perspectives within research philosophy: positivism, critical realism, interpretivism, postmodernism, and pragmatism. This study adopts an interpretivist perspective, which holds that human beings are fundamentally different from physical phenomena because they actively create meaning. As such, the study of people and their social worlds cannot be approached in the same manner as the study of natural sciences. Interpretivism emphasizes that social sciences should be distinct from natural sciences, precisely because human behavior is shaped by diverse cultural backgrounds, lived experiences, and contextual factors. Individuals interpret the world in different ways, and these interpretations evolve over time. Therefore, rather than seeking generalizable, law-like explanations as in positivist research, interpretivist inquiry seeks to uncover rich, context-specific insights into how people make sense of their realities (Saunders et al., 2023).

This philosophical stance is particularly well-suited to the aim of this study, which is to explore how public servants define and prioritize their prioritized values (SRQ1) and perceive process automation based on their value stances (SRQ3). The participants in this study come from diverse professional, organizational, and cultural backgrounds, each shaping their unique value stances and attitudes toward automation. Interpretivism provides a suitable foundation for such inquiry, as it values subjective understanding, multiple interpretations, and the complexity of lived experience. A key axiological implication of interpretivism is the recognition that the researcher's own values, assumptions, and interpretations inevitably influence the research process (Saunders

et al., 2023). Unlike in positivist traditions, where neutrality is emphasized, interpretivist researchers are encouraged to reflect on their own role in the construction of knowledge. In addition, central to this philosophy is the idea of adopting an empathetic stance, wherein the researcher attempts to enter the social world of the participants and understand it from their perspective. In practice, interpretivist researchers aim to capture what is meaningful to participants, acknowledging the existence of multiple social realities. This study follows that tradition, seeking to generate nuanced insights into how public servants interpret and respond to process automation within their specific work environments.

4.2 Approach to Theory Development

Saunders et al. (2023) outline several approaches to theory development, including deductive, inductive, and abductive reasoning. This study adopts an abductive approach, which combines elements of both deduction and induction. Rather than moving strictly from theory to data (as in deduction approach) or from data to theory (as in induction approach), abduction involves an iterative movement between theory and empirical observations. It allows the researcher to remain open to insights emerging from the data, while also drawing on existing theoretical frameworks to support the identification and interpretation of patterns (Fereday & Muir-Cochrane, 2006; Skjott Linneberg & Korsgaard, 2019).

In this study, existing theoretical frameworks discussed in Chapter 3 are used to inform the interpretation of findings. Specifically, the categorization of public values by Masso et al. (2024) is employed as a reference to guide the elaboration, interpretation and understanding of how public servants prioritize and define values in their work (SRQ1) and how they perceive process automation in relation to those values (SRQ3). To address SRQ2, which focuses on the identification of automation levels, the study draws on six ideal types of automation by Roehl (2022) to categorize the types and intensity of automation reported by participants in their respective work areas. For SRQ3, which explores public servants' perceptions of process automation, themes and patterns are derived primarily from empirical data. The framework proposed by Toll et al. (2022) is not used to guide interpretation directly but serves two purposes: (1) to guide the sampling and recruitment strategy, and (2) to compare results across different groups to explore whether certain types of participants tend to hold more optimistic or pessimistic views toward automation.

4.3 Methodological Choice and Research Strategy

This study adopts a multi-method qualitative research design, combining expert interviews with projective and elicitation techniques to explore how public servants perceive process automation within the context of social welfare. Qualitative research is defined as an in-depth and holistic

approach to studying complex phenomena within their natural settings (Patton, 2002). It is exploratory and interpretative, aiming to understand meaning, experience, and processes, as well as how people construct meaning within a social context rather than measuring variables numerically (Creswell & Poth, 2018; Patton, 2002). The approach emphasizes flexibility, reflexivity, and deep engagement with participants through methods such as interviews, document analysis, or observations (Creswell & Poth, 2018). Furthermore, it relies on purposeful sampling, open-ended data collection, and inductive analysis to produce rich and context-specific insights (Patton, 2002). In contrast to quantitative research, qualitative inquiry puts more emphasis on subjectivity, complexity, and the construction of knowledge between researchers and interviewees (Creswell & Poth, 2018).

On the other hand, expert interviews are an established method in qualitative research that allows for collecting in-depth insights from individuals with specialized knowledge, decision-making authority, or direct involvement in a given field (Bogner et al., 2009). Given the study's focus on how public servants perceive automation in social welfare, qualitative research, particularly expert interviews, is suitable for capturing in-depth insights related to SRQ1, SRQ2, and SRQ3. This method offers flexibility in exploring professionals' experiences, values, and decision-making processes regarding automation. Since automation in public administration is not merely a technical issue but also a social and policy-driven process, qualitative research helps examine how technology interacts with human discretion, policy frameworks, and organizational cultures (Creswell & Poth, 2018). Additionally, this approach allows for context-specific exploration, capturing nuances in national policies, institutional structures, and cultural influences (Patton, 2002). Given that data collection involved semi-structured expert interviews, qualitative research enables adaptive questioning and further probing into emerging themes, rather than being restricted by rigid survey structures (Creswell & Poth, 2018).

The study originally intended to use a comparative case study approach with Denmark and Estonia. However, due to limited data availability in Denmark (only two interviews), the research focuses primarily on expert insights rather than structured country-level comparisons. While Estonia provides a richer empirical base with ten interviews, Danish perspectives serve as complementary insights rather than a full case comparison.

The in-depth interviews were conducted in English and in person, using a semi-structured interview guide (see Appendix A). Open-ended questions were employed to encourage participants to share their perspectives freely, avoiding leading questions or preconceived assumptions. To develop the interview guide, the author attempted to obtain, review, and adapt interview guides from one of the studies referenced in the Chapter 3 to ensure consistency, which also supported the finding validation during the later stages of the research. The interview guide

was reviewed by supervisors before the interview to incorporate relevant feedback and ensure that the interview guide was appropriate. The interviews include 2 main sections. In the first section, participants were asked about the values they prioritize in their work. The second section focused on topics related to their perceptions of process automation, including the types of automation technologies in use, their roles and responsibilities, and the interaction between human actors and automated systems. Participants were also invited to reflect on the impact of process automation on their professional values, including any potential value conflicts, as well as on how these technologies influence their roles, work processes, and day-to-day interactions. Additionally, the discussion covered their collaboration with automation teams and their assessment of the performance and effectiveness of the technologies in place.

Acknowledging that discussing values and their relationship to process automation in SRQ1 and SRQ3 can be an abstract topic, even for experts and researchers, it may be challenging for participants to elaborate on their thoughts. To address this issue, both projective techniques and elicitation techniques were used. According to Soley & Smith (2008), projective techniques are indirect research methods designed to uncover people's underlying thoughts, feelings, attitudes, and motivations, which they might find difficult to articulate or may be unwilling to express directly. Common projective techniques include word association, sentence completion, role-playing, and the third-person technique. On the other hand, elicitation techniques refer to systematic data collection methods and structured interviewing approaches (Johnson & Weller, 2001). However, they should not be confused with structured interviews, as, although both involve standardized questioning, elicitation techniques are more exploratory and emergent, aiming to reveal tacit subjective understandings within a cultural domain (Johnson & Weller, 2001). Examples of elicitation techniques include visual stimuli, folk taxonomies, and free-recall listing. Both projective and elicitation techniques have been widely used across various disciplines, including linguistics, computer science, psychology, statistics, economics, and sociology, as they are valuable for uncovering unarticulated personal experiences and tacit knowledge that may be difficult to obtain through traditional interviews or simple descriptive discourse (Johnson & Weller, 2001; Soley & Smith, 2008).

To address SRQ1, participants were also asked to select the most important values they believe are important in their areas of work. First, to encourage free expression, interviewees articulate their perspectives on important values in their own words. Following this open-ended response, they are presented with a list of 15 predefined values from Masso et al. (2024). This list serves as an elicitation tool, helping participants refine or supplement their initial answers by identifying values that may be relevant to their perspective. They then rank these values in order of importance and provide justifications for their ranking.

To address SRQ3, both elicitation and projective techniques were applied. Using the list of values they had previously selected as elicitation tools, interviewees were first asked to reflect on their own experiences and understanding of process automation and artificial intelligence (AI) in the workplace. Projective techniques were then employed by presenting a hypothetical future scenario involving increased automation and AI integration. Participants were asked to consider how such changes might influence the values they had ranked earlier. To capture the nuanced impact of automation, participants categorized each value into either a positive influence, a negative influence, or no impact category, explaining their reasoning. After categorizing values based on their perceived influence, interviewees were asked to re-rank their value list. If any values shift in importance, they must explain why the change occurred. This dynamic reassessment provides deeper insights into how exposure to automation-related reflection reshapes value priorities, revealing both conscious and subconscious shifts in perception. Additionally, for those who hold middle or high-level management positions, an added projective element was included. They were asked to imagine themselves as front-line public servants and to describe their initial thoughts and reactions to process automation from that perspective. They are asked to imagine themselves as front-line public servants and provide their initial thoughts and reactions to process automation from this perspective.

4.3.1 Sampling Strategy

To ensure rigorous data collection and, more importantly, the feasibility of the recruitment, the study follows a mixed purposeful sampling strategy, combining:

- Maximum variation sampling to capture perspectives from experts with different roles, organizations, and locations (Patton, 2002; Suri, 2011)
- Intensity sampling, selecting participants with significant exposure to process automation (Patton, 2002; Suri, 2011)
- Snowball sampling, where initial interviewees recommended other relevant experts (Patton, 2002; Suri, 2011)

First, we identified the targeted participants for the study. According to the study of Toll et al. (2022), in the context of process automation, there are 4 groups of stakeholders, namely *The Digitalization Group*, *IT Department*, *Support Functions*, and *Operational Staffs*. Each stakeholder group could have one or more stakeholder roles (see Table 1). The *Digitalization Group* consists of personnel responsible for developing automation capacity structure and strategies, leading the way concerning digitalization, and providing guidance and support to other parts of the organization. The *IT Department* consists of personnel whose work involves

supporting and servicing the organization in matters relating to IT. The *Support Functions* Group consists of personnel from departments that provide internal services for the municipality or the public administration in general (For instance, Legal, Human Resources, Accounting, etc). Their primary daily responsibility is to support other parts of the municipality. On the other hand, the *Operational Staffs* Group consists of employees working in public services who interact directly with citizens. Focusing on delivering services, they are the group that has the most contact with citizens.

Operators in the stakeholder role are defined as people who are responsible for executing the activities/processes that make the e-government system function effectively (Heeks, 2006; Lindgren et al., 2021; Toll et al., 2022). However, several stakeholder groups have different types of *operator* with different values, responsibilities, and levels of interaction with citizens. In *Support Functions*, and *Operational Staffs* stakeholder groups, *operators* are the ones who ensure that automated solutions function as intended in relation to the processes they execute (Lindgren et al., 2021; Toll et al., 2022). Whereas, in the *IT Department* group, *operators* are the ones responsible for maintaining and monitoring the organization's infrastructure and technical backend of the automation solutions, ensuring they remain operational (Toll et al., 2022).

This research aims to investigate the perspectives of public servants in the front-line units, which is closely aligned with the stakeholder role of *Operators* within the *Operational Staffs* stakeholder group, as described in the study of Toll et al. (2022). Drawing on their definition, we define our target group for recruitment as public servants who are the users of the process automation technology in their daily work (*Operators*), and are directly involved in or manage the delivery of either public services or benefits to the citizens (*Operational Staffs*). Preferably, participants should be from governmental agencies or municipalities that administer social welfare programs, such as subsistence benefits, child support, emergency financial aid, disability support, unemployment benefits, workability benefits, and unemployment support services etc.

However, due to resource constraints, we remain open to recruiting additional stakeholders, including middle and high-level managers, provided they have relevant knowledge of the research topic and can offer insights into the agency's automation strategy, organizational decisions, and broader concerns that caseworkers may not be aware of. Their perspectives provide valuable context on the challenges and concerns faced by caseworkers, how they perceive process automation, and essential background knowledge for analysis.

Regarding the locations, we target organizations/agencies in Denmark and Estonia due to the limited number of studies related to process automation and public servants' perception in these countries. In addition, both countries have implemented process automation technologies in

administrative decision-making for welfare provision, unlike many other nations where automation is still at the pilot stage. Notwithstanding, Denmark and Estonia are globally recognized as leaders in digital government and public sector innovation, shown via their top rankings in international assessments. In particular, according to *UN E-Government Survey* (2024), Denmark and Estonia ranked 1st (score 0.9847) and 2nd (score 0.9727), respectively, in the E-Government Index by Country. Both of them excel due to a well-integrated digital infrastructure; advanced and holistic e-services for citizens, including e-health and e-taxation; high digital literacy and internet penetration rates; and strong government commitment to transparency and innovation (*UN E-Government Survey*, 2024). According to OECD (2024), Denmark always belonged to the top 10 performers across 6 dimensions: digital by design (ranked 4th), data-driven public sector (5th), government as a platform (2nd), open by default (2nd), user-driven (8th), and proactiveness (4th). On the other hand, Estonia followed closely when it belonged to the top 10 performers across 4 dimensions: digital by design (13th), data-driven public sector (2nd), government as a platform (6th), open by default (10th), user-driven (17th), and proactiveness (2nd). Overall, Denmark and Estonia ranked 2nd and 6th, respectively, in the OECD Digital Government Index (OECD, 2024). Given their advanced digital ecosystems, public servants in Denmark and Estonia have substantial experience with process automation, making them valuable sources of insight. Findings from these leading digital nations can also inform broader European digital policies, enhancing the study's relevance for international policymakers.

The recruitment process lasted from December 2024 to May 2025. The Author identified potential participants through the websites of Estonian municipalities and public agencies, where public servant information is publicly available. In Denmark, recruitment relied on referrals from experts in the field. Additionally, the author also identified and contacted potential participants through LinkedIn. Before contacting people, the Author also reviewed their job description (if available online) to ensure that they are eligible for the study. During the recruitment period, over 900 emails were sent, resulting in 10 public servants agreeing to participate in the study.

4.3.2 Data Analysis

The data analysis followed a thematic analysis approach, focusing on examining and interpreting patterns of meaning within qualitative data (Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006). The coding process employed a combination of deductive and inductive coding, leveraging the strengths of both methods (Fereday & Muir-Cochrane, 2006; Skjott Linneberg & Korsgaard, 2019).

As a first step, the author uploaded all transcripts into NVivo software for more systematic organization, documentation, and analysis. Then, the author develops a deductive coding scheme

based on the described theoretical frameworks. This deductive phase ensures that pre-defined categories related to values, perception of process automation, and attitudes toward software robots are systematically considered, reducing subjectivity and the time needed to explore and make sense of data (Fereday & Muir-Cochrane, 2006; Skjott Linneberg & Korsgaard, 2019). In an iterative process, the Author first familiarized himself with the data by reviewing interview responses and listening to audio recordings. The data were then coded according to the deductive scheme in the software. After the initial deductive coding, the next coding round focused on identifying inductively emerging themes not covered in the theoretical frameworks. This process allows the coding scheme to be recursively refined and extended by incorporating new categories or concepts discovered in the data. The inductive stage offers flexibility, enabling researchers to uncover novel insights and consider alternative interpretations, thereby mitigating potential biases from relying solely on pre-existing theories. Together, this mixed approach ensures a comprehensive and balanced analysis, integrating established frameworks while remaining open to unexpected findings (Fereday & Muir-Cochrane, 2006; Skjott Linneberg & Korsgaard, 2019). After the analysis, the author attempted to validate the findings with the current theoretical frameworks to assess whether the results align or differ across different cultural, organizational, and administrative contexts.

4.3.3 Methodology Limitations

The methodological approach is not without limitations. The author acknowledges that personal background, theoretical lens, and prior knowledge may influence the data collection and analysis processes. Ideally, at least three researchers should review the transcripts and independently code the data before discussing and refining the coding scheme. This process often involves calculating inter-coder reliability, which quantitatively assesses the level of agreement between researchers to ensure the consistency and robustness of the coding scheme (O'Connor & Joffe, 2020). However, in this thesis, the coding is conducted by a single researcher. To mitigate this limitation, NVivo is used to systematically and transparently document coding decisions, providing a foundation for external review and feedback. While inter-coder reliability cannot be directly calculated in this case, the Author pilot-tested the coding scheme on a small data subset and engaged in iterative feedback loops with Supervisors during the analysis stage to mitigate subjective bias and ensure the robustness of the scheme. In addition, language barriers limited participation, as some public servants felt less comfortable engaging in interviews conducted in English. As a result, the final sample includes 10 participants from various areas of social welfare, most of whom speak English well and hold specialist roles, with some also leading teams of social workers. Although all participants met the eligibility criteria, the sample may not fully reflect the broader public servant population.

4.3.4 Ethical Reflection

Given the involvement of human participants and the interpretivist nature of the research, ethical considerations were a central concern throughout the study. Anticipating challenges such as language barriers and potential participant discomfort, particularly since interviews were conducted in English and the targets are public servants, the researcher implemented several measures to ensure the well-being, trust, and autonomy of participants.

To establish transparency and build initial trust, a detailed project fact sheet was developed and reviewed in consultation with the research supervisors before being distributed to potential interviewees. This document clearly outlined the research objectives, interview process, data anonymization procedures, the researcher's and supervisors' contact information, and the principles of voluntary participation. Once individuals agreed to participate, informed consent was formally obtained and documented. Participants also received an interview guide in advance to help them prepare and feel more comfortable with the process.

Recognizing the potential impact of setting on participant openness and comfort, the researcher offered to travel to interviewees' preferred locations. This approach was designed to foster a more relaxed atmosphere, enable rapport-building, and facilitate richer nonverbal communication. For those who preferred a different format, an online interview option was also made available. Regardless of the mode of interview, permission to record the session was always requested beforehand, and participants were reminded again of how their data would be anonymized and securely stored.

Although the topic is not overtly sensitive, discussions about process automation can evoke concerns related to job security or internal politics. To address this, particular care was taken to ensure that participants felt safe and comfortable to speak openly and without fear of repercussions. To protect participant confidentiality, all identifying information was removed from transcripts, and pseudonyms were used in reporting. Data were stored securely on encrypted devices and institutional servers with restricted access. Any references to specific job titles, or organizational contexts that could risk indirect identification were carefully generalized or omitted. In addition, interviews were conducted in a conversational, non-judgmental manner, emphasizing that there were no right or wrong answers. Throughout the study, the researcher maintained a reflexive stance, keeping research notes to document biases, emotions, and interpretive decisions. This reflective practice helped ensure that the researcher remained critically aware of their own influence on the research process, in alignment with the interpretivist emphasis on subjectivity and empathy.

Ethical approval for this study was obtained from the relevant academic ethics committee. The study was therefore conducted within the frameworks of both Estonian and Belgian institutional and ethical standards, ensuring integrity, accountability, and respect for all stakeholders involved. All research activities were conducted in full compliance with institutional ethical guidelines, code of conduct, and data protection regulations, including the General Data Protection Regulation (GDPR), the Estonian Best Practice in Research and the European Code of Conduct for Research Integrity, developed by ALLEA (the European Federation of Academies of Sciences and Humanities). In addition, the research adhered to the quality assurance memorandum of Estonian universities and the ethical guidelines and policies established by KU Leuven, which address a range of research ethics topics, including academic freedom, human rights, dual-use research, the use of laboratory animals, and the handling of personal data.

5 Sample Description

5.1 Overview of Participants

Table 3 provides an overview of the study participants, describing their country, organization, position, and role.

Table 3: Overview of Participants

Country	Organization	Position	Years of experience	Areas
Denmark	Danish Agency of Family Law	Specialist	6.5 years	Child custody and family-related services
Denmark	Danish Agency of Family Law	Manager	2 years 1 month	Child custody and family-related services
Estonia	Estonian Social Insurance Board	Specialist	1 years 7 months	Pensions and maternity benefits
Estonia	Estonian Unemployment Insurance Fund	Specialist	3 years 9 months	Conditional unemployment services
Estonia	Estonian Unemployment Insurance Fund	Manager	21 years	Unemployment benefits
Estonia	Estonian Unemployment Insurance Fund	Specialist	10 months	Supportive unemployment services
Estonia	Estonian Unemployment Insurance Fund	Specialist	8 years	Work ability benefits
Estonia	Welfare and Health Care Department, Tallinn Municipality Government	Specialist	4 years	Disability services
Estonia	Welfare and Health Care Department, Tallinn Municipality Government	Specialist	5 years 9 months	Disability services
Estonia	Welfare and Health Care Department, Pärnu Municipality Government	Specialist	25 years	Homeless Welfare and Benefits

In sum, we have 2 participants from Denmark. Both participants are from the Danish Agency of Family Law, with roles focused on the provision of child custody and family-related services. One is a specialist, while the other is a Deputy Head, indicating a mix of operational and managerial perspectives. Besides, we have 9 participants from Estonia, coming from diverse public institutions:

- Estonian Social Insurance Board (1 participant): Focuses on pensions and maternity benefits.
- Estonian Unemployment Insurance Fund (4 participants): Covers both service and benefits provision, including work ability benefits, unemployment benefits, and unemployment support services. Positions range from case managers and consultants to team leads and department heads.

- **Municipal Welfare and Health Care Departments (4 participants):** Representing Tallinn, Elva, and Pärnu Municipalities, these specialists and department heads oversee disability services, homelessness welfare, and benefits administration.

5.2 Estonia and Its Welfare System

Estonia, a Baltic nation in Northern Europe, borders Latvia to the south, Russia to the east, and the Gulf of Finland to the north. With a population of approximately 1.3 million, Estonia regained independence from the Soviet Union in 1991 and has since emerged as one of the most digitally advanced societies in the world (Raun, 2001). The country gained global recognition in the 2000s for its technological advancements, particularly in information and communication technology (ICT). Estonia was the birthplace of Skype, once Europe's only significant internet platform, further consolidating its reputation as a leader in digital innovation (Drechsler, 2018). Over the years, Estonia has heavily invested in e-governance, positioning itself as a pioneer in digital governance. The country prioritizes digitalization more strongly than most other nations, aiming to build a fully digital society where nearly all public services can be accessed online (Drechsler, 2018).

Estonia's welfare system blends liberal characteristics, emphasizing competition and free-market principles, with conservative elements, such as limited redistributive policies (Kaun & Masso, 2025). It operates on universalistic, equal solidarity funding principles, and its design and distribution of welfare services align with the Bismarckian low-spending welfare model (Vihalemm et al., 2025). Over the past few decades, trust in state institutions has undergone significant transformations as Estonia has strengthened its governance framework. The welfare system reflects the country's digital-first approach, integrating automation and data-driven decision-making to enhance service delivery (Kaun & Masso, 2025).

Estonia's welfare system is a collaborative framework involving national agencies and local municipalities, with a strong emphasis on digital solutions for efficient service delivery. Estonia's e-government infrastructure plays a crucial role in service delivery. Citizens can access most public services through the e-Estonia portal, where they can apply for benefits, check eligibility, and track their applications online (e-Estonia, 2025). Public organizations often use distinct information systems tailored to their specific functions to manage relevant data and deliver services. To ensure secure and efficient data exchange, X-Road serves as a distributed platform to facilitate the communication between these diverse systems across government institutions. By connecting separate systems, X-Road enables streamlined service delivery while maintaining data privacy and security (e-Estonia, 2024).

In the subsections below, the Author will discuss the roles and responsibilities of these national agencies and local municipalities, the services and benefits of the organization that are owned by participants of the studies, and finally the information systems identified during the interview.

5.2.1 Social Insurance Board (Sotsiaalkindlustusamet):

The Estonian Social Insurance Board is a national agency that administers pensions, allowances, and benefits. It determines and disburses child support, assesses disability severity, provides rehabilitation and special care services, offers victim support and reconciliation services, and coordinates nationwide child protection efforts (Sotsiaalkindlustusamet, n.d.-a). The operation of the Board is regulated under the Statutes of the Social Insurance Board (Sotsiaalkaitseminister, 2025).

To support its operation, the Board utilizes Social Insurance Board Information System (SKAIS, first implemented in 2017) to administer a wide range of social benefits and services. In 2021, the system integrated 2 new applications: a self-service platform used by applicants, and a platform used by the Social Insurance Board staff and medical expert (Mozberg, n.d.). This comprehensive system process applications, gather data from different sources, and streamlines the management and disbursement of benefits, ensuring timely and accurate support for eligible citizens. SKAIS integrates various processes related to social protection, facilitating effective case management and decision-making (RIHA, 2025; Sotsiaalkaitseminister, 2024).

5.2.2 Unemployment Insurance Fund (Eesti Töötukassa):

The Estonian Unemployment Insurance Fund is a national agency that manages unemployment insurance benefits, supports job seekers, and offers services to employers. It provides financial assistance to the unemployed, facilitates job placements, and offers training programs to enhance employability (Töötukassa, n.d.).

The Board has different systems tailored to specific types of services and benefits. In terms of work ability benefits, it utilizes the RIK for various administrative tasks, including collecting data for the assessment of work ability allowances based on the Work Ability Allowance Act (Riigikogu, 2019). Business Register (RIK) is a government portal ruled by the Ministry of Justice. This portal manages various registers and information systems, including but not limited to the e-business register, e-notary, e-land register, and criminal record databases. About 50 registers are under the control of RIK. The Estonian Business Register has been in operation since 1 September 1995 (LKS Consult, 2021).

In terms of unemployment support services, the Fund employs the OTT (decision-support) system, an AI-powered decision-support tool first implemented in 2021, to predict the risk of long-term unemployment among job seekers. OTT is a machine learning application designed to support employment consultants in delivering tailored assistance to unemployed individuals. It calculates the probability of a job seeker finding employment within 180 days, and subsequently becoming unemployed again within the same period (Digiministeerium, 2021; e-Estonia, 2021; Nortal, 2022). In addition, OTT identifies key factors influencing these two outcomes. By using a scoring system, OTT enables more effective allocation of specialists' time and resources. By analyzing extensive data, including socio-demographics, employment history, and labor market characteristics, OTT assists counselors, specialists, and case managers in understanding clients' situations, estimating their probabilities of finding employment, and tailoring support services to individual needs (Digiministeerium, 2021; e-Estonia, 2021; Nortal, 2022). It aims to reduce excessive support for individuals who are likely to manage on their own while increasing support for those at higher risk of prolonged unemployment (Vihalemm et al., 2025)

5.2.3 Local Municipalities:

Local governments in Estonia are tasked with organizing and providing community-based social services, including social assistance, elderly and disability care, child welfare, housing support, and labor market integration programs. This responsibility is outlined in the Social Welfare Act, which establishes the organizational, economic, and legal foundations for social welfare in Estonia (Riigikogu, 2016).

Municipalities use the Social Services and Benefits Registry (STAR) system to implement and monitor case management methodologies. First introduced around 2009, the system has been undergoing a renewal plan since 2021—led by the Health and Welfare Information Systems Centre (TEHIK)—to improve its user-friendliness, architecture, and interface (TEHIK, n.d.). As a centralized state database, STAR facilitates the organization and execution of social services while enabling seamless information exchange between social service providers and local governments. Through this system, social workers can access relevant data on individuals, submit reports on service provision, and coordinate efforts with other institutions (CBSS, n.d.).

STAR plays a crucial role in reducing the administrative workload for social workers by minimizing time spent on documentation and case management, allowing them to focus on their primary responsibility—assisting individuals in need (TEHIK, n.d.). The system supports a wide range of functions, including the allocation of social services and benefits, registration of child protection and victim support cases, assessment of assistance needs for children and adults, and management of adoption and custody processes. Additionally, it allows service providers to

register service allocations, submit cost reports to local governments, access other databases for case assessments, and generate statistical reports for policy decisions and service improvements (Sotsiaalkindlustusamet, n.d.-b; TEHIK, n.d.).

Besides its role in case management, STAR serves as a tool for monitoring the performance of social service providers, enhancing the quality and efficiency of social work practices. The system has provided the pre-conditions for more efficient and high-quality official statistics in the social work domain, contributing to the development of standardized terminologies, classification systems, and work processes (CBSS, n.d.).

5.3 Denmark and The Danish Agency of Family Law

Denmark, a Scandinavian country in Northern Europe, is widely recognized for its comprehensive welfare system, often seen as a model of an effective welfare state. The organization of welfare provision in Denmark is grounded in a universalist model with high level of public spending (Denmark.dk, n.d.). This foundation supports the country's broader goals of social equality and cohesion. The Danish welfare model attempts to ensure that all citizens have equal access to essential services such as education and healthcare, regardless of their social or financial background (Denmark.dk, n.d.). The welfare system covers a broad range of benefits, including unemployment, disability, old-age, and survivorship support, typically provided at little to no cost to individuals (Denmark.dk, n.d.).

Denmark's journey toward digitalization in the public sector began in the 1990s, driven by a shared ambition across state, regional, and municipal levels to harness digital technology to make public administration more flexible, efficient, and responsive to citizens' needs (Fleron et al., 2021). This transformation has largely followed a bottom-up approach, granting municipalities considerable autonomy to design strategies suited to their local context. At the same time, continuous top-down policy development at the national level has provided strategic direction, acting as a guiding "lighthouse" for local initiatives (Fleron et al., 2021).

The interplay between national leadership and local innovation has promoted a resilient digital ecosystem marked by cross-sectoral collaboration. Automation plays a key role in this system, as it routinizes the impact of national strategies on local governments. In turn, local authorities develop routine resilience mechanisms—adapting and adjusting their practices to fit national goals while responding to local demands. This iterative process has prompted national agencies to adopt a more reflexive "sense-and-correct" posture, learning from local feedback and adapting national strategies accordingly in a healthy manner (Fleron et al., 2021).

The Danish Agency of Family Law (Familiieretshuset) is one of the key institutions under the Danish Ministry of Social Affairs and Interior. It plays a central role in administering family-related legal matters and social services related to family issues. The agency handles cases involving divorce, paternity and co-maternity, child custody, visitation rights, child support, and adoption. Its mission is to ensure that families receive timely, fair, and empathetic support during some of the most sensitive moments in their lives (Familiieretshuset, n.d.).

According to one high-level manager of the Agency, the Agency currently utilizes a digital case management system that allows citizens to submit applications, track the status of their cases, and communicate with officials online. This aligns with Denmark's broader commitment to digital governance, ensuring that family law processes are accessible, transparent, and efficient. In complex cases, the agency collaborates with local municipalities, social workers, and courts to ensure decisions are made in the best interests of the child and family. However, most of the evaluation and decision-making processes are made manually and require a significant level of human interaction. In the near future, the organization will implement more LLM and AI tools and systems to support the eligibility assessment and communication between the organization and its customers. Furthermore, the systems will also be used to monitor the performance of caseworkers and the progress of cases to ensure efficiency and best interest of the citizens.

5.4 Coding Scheme

The findings are structured according to the research questions and main themes that emerged during the coding process. The coding scheme is illustrated below in Figure 3.

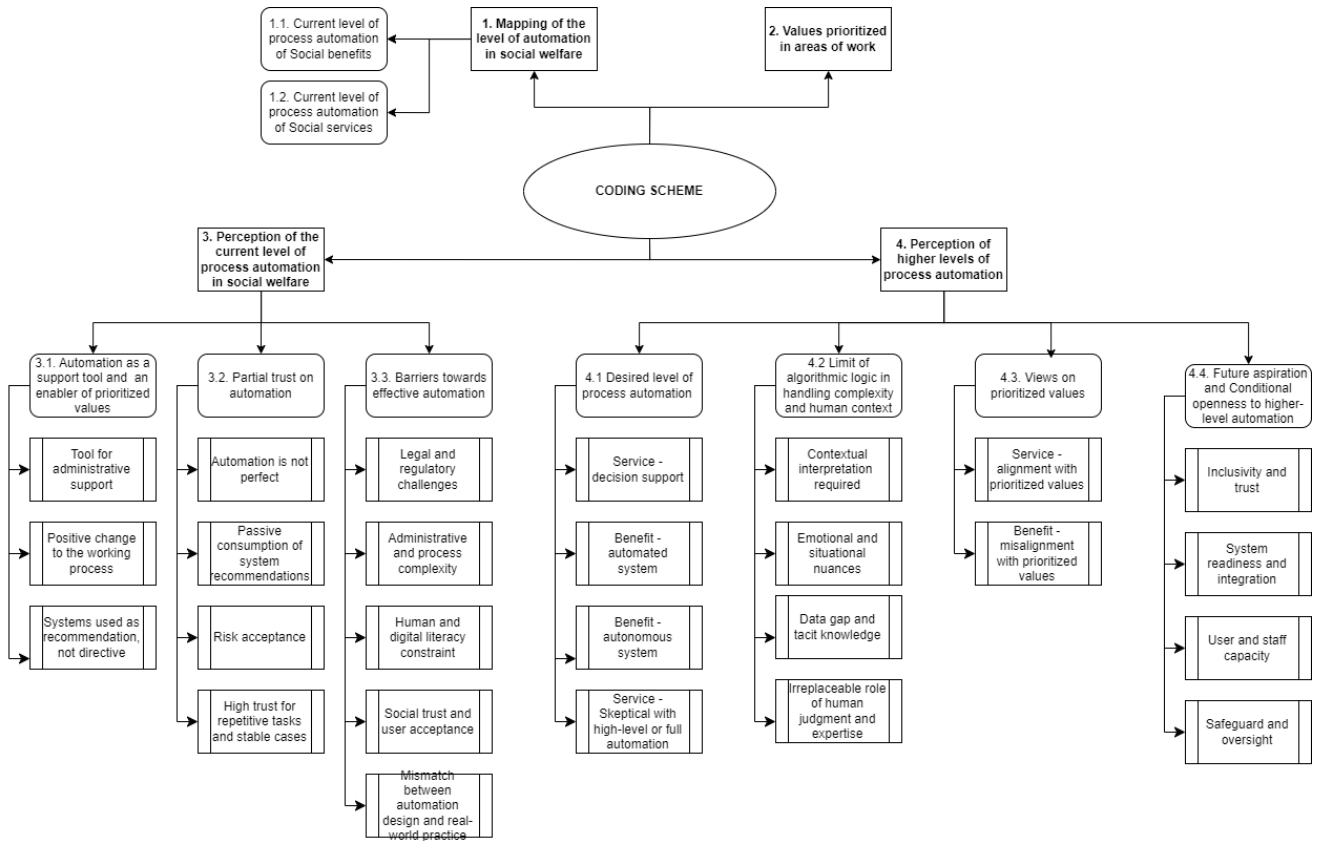


Figure 3: Coding Scheme

The four main themes, 1, 2, 3, and 4, are derived from the research questions, which explore the level of process automation in administrative decision-making, the values prioritized in daily work, and the perception of process automation in light of both automation levels and these values. The first subquestion, SRQ1, and the first theme, prioritized values in areas of work, describe the values emphasized by public servants working in each group. The second subquestion, SRQ2, and the second theme, mapping the level of automation, present both the current and historical (5–7 years ago) levels of automation of administrative decision-making, highlighting differences between the social service and benefit groups. For these two themes (and sub-research questions), the data were organized using the interview questions and the ranking exercise described in Section 4.4, as well as the analytical lens outlined in Chapter 3. In contrast, the third question, SRQ3, is further divided into the third and fourth themes: perceptions of the current level of process automation and perceptions of higher levels of process automation, were developed inductively. Most of the codes and subthemes in these sections emerged directly from the empirical data and were structured based on the researcher's interpretation and thematic analysis. Exceptions include subthemes: Automation as a support tool and an enabler of prioritized values, Desired level of process automation, Views on prioritized values, which were informed by the theoretical frameworks discussed in Chapter 4, similar to the approach taken in Sections 6.1 and 6.2.

6 Findings

This chapter presents the findings of the study in alignment with the three sub-research questions and the four main analytical themes derived from them. It begins with Section 6.1, which addresses SRQ1 by examining the values prioritized by frontline public servants in their respective areas of work. Section 6.2 focuses on SRQ2, mapping both the current and historical levels of process automation in administrative decision-making. The final two sections 6.3 and 6.4 respond to SRQ3. Section 6.3 explores participants' perceptions of the current level of process automation, highlighting perceived benefits, challenges, and how automation is viewed in relation to their work values. Section 6.4 examines how participants respond to a projected future scenario with increased automation and AI integration, capturing emotional reactions, changes in value priorities, and reflections on their professional identity.

6.1 SRQ1: What Key Values do Frontline Public Servants Prioritize in Their Work?

Based on the interview responses and the ranking exercise, Table 4 below illustrates the values prioritized by public servants. Each column represents an individual interviewee: blue indicates the service group, green the benefit group, and red highlights an exceptional case with elements of both groups. The values are listed from 1st to 6th in order of importance for each participant.

Table 4: Prioritized Values in Areas of Work

	Accessibility service for people with disability	Housing service for the homeless	Supportive unemployment service	Conditional unemployment service	Child custody services	Child custody services (managerial)	Accessibility services + disability benefits	Child support + family benefits	Work ability benefits	Unemployment insurance benefits (managerial)
1 st rank	Welfare	Welfare	Welfare	Cooperation	Welfare	Efficiency	Welfare	Justice	Justice	Transparency
2 nd	Equality	Autonomy	Efficiency	Equality, Transparency, Trust	Efficiency	Justice	Equality	Transparency	Transparency	Explainability
3 rd	Efficiency	Transparency	Equality	Privacy	Transparency	Transparency	Diversity/Inclusive ness	Efficiency	Efficiency	Welfare
4 th	Transparency	Privacy	Empathy	Welfare, Justice	Explainability	Explainability	Efficiency	Equality	Privacy	Solidarity
5 th	Explainability	Justice			Equality		Transparency		Interoperability	Justice
6 th					Autonomy		Security		Welfare	Efficiency

Via the description and ranking of values by the interviewees, the findings suggest that public servants in service and benefits groups might prioritize values differently. In the service group, the most frequently prioritized values include welfare, equality, transparency, and efficiency. Notably, six out of seven interviewees in this group ranked welfare as the most important value guiding their work. The values of equality, transparency, and efficiency commonly appeared in the second and third ranks. An exception is observed at the managerial level, where efficiency was ranked highest, followed by justice and explainability, with welfare not appearing at all in the manager's prioritization. This divergence suggests that managerial perspectives may differ from those of front-line specialists in terms of value orientation. One specialist in conditional unemployment services, who monitors clients' job-seeking efforts and imposes sanctions when necessary, places cooperation as the most important value. She describes cooperation as in-person communication and voluntary information sharing between both parties to promote understanding and reach a mutual agreement on necessary actions. It also entails a commitment from both sides to follow through on what has been agreed upon. Additionally, the specialist considers trust, equality, and transparency equally important. While her understanding of equality and transparency aligns with that of other specialists in the service group, she adds an emphasis on trust. In her view, trust must be mutual: clients should trust her to help them and provide the necessary support, and, in return, she expects clients to be "truthful, actively seek employment, follow her guidance sincerely, and not misrepresent their circumstances". Another specialist, working in supportive unemployment services, adds empathy to the list of core values. She highlights that her clients are "human beings who need help and want better conditions in life." Therefore, empathy is seen as an essential and irreplaceable quality for public servants in their field. According to her, empathy is expressed through active listening, neutrality, and a sincere effort to understand clients' situations without prejudice or judgment.

In contrast, interviewees in the benefits group placed greater emphasis on justice, transparency, and efficiency. Similar to the service group, a distinction emerged between managerial and specialist perspectives. The managerial respondent in this group placed stronger emphasis on transparency, explainability, and welfare, rather than justice and efficiency.

Across both groups, the major theme is that interviewees frequently described the highest-ranked value as an end goal, while the remaining values were characterized as instrumental means to achieve that goal. For the service group, welfare was often described as the well-being of citizens and clients, ensuring that individuals receive the support or services that alleviate hardship and address their needs. Public servants mentioned the necessity of trust, empathy, and responsiveness in communicating with clients and addressing their difficulties. Values such as efficiency,

equality, autonomy, privacy, and explainability were perceived as supporting mechanisms in realizing the overarching goal of welfare. Some illustrative quotes from the service group include:

- “We have to always think of decisions that are best for the child and mitigate the current situation, especially when parents can be both violent and toxic.” — Specialist in child custody services
- “It is important that our service can make people happier. If they are happy, we are happy.” — Specialist in accessibility services for persons with disabilities
- “In our job, people need to have empathy to understand the clients so that we can provide the best solutions for them.” — Specialist in supportive employment services
- “Our employees are well-known for having a big heart.” — Manager in child custody services

Within the benefits group, justice was most frequently regarded as the central value. It was defined as ensuring that services or financial support are distributed strictly in accordance with legal entitlements, no more, no less. Benefits are provided based on rules, individual needs, and principles of fairness, rather than uniform treatment for all. Transparency, explainability, and efficiency were viewed as mechanisms that help uphold the principle of justice. For instance, a specialist in family benefits reports that his colleagues see themselves as “justice fighters”: “We don’t usually care whether a person receives money or not, we care whether that person has the right to receive it.”. Similarly, an officer in unemployment benefits emphasizes the non-negotiable nature of the legal compliance in her work: “I care a lot about laws and I cannot make a decision that goes against the law.”

While efficiency was consistently ranked as a high priority in both groups, the interpretation of this value differed. In the service group, efficiency was understood primarily in terms of cost-effectiveness, delivering the best outcomes for the resources invested. Public servants underscore the importance of timely and impactful interventions for clients facing hardship. As one participant explained: “Efficiency is always on my mind. We try our best so that people can get help without delay. We have many cases but very little time”. In contrast, the benefits group understood efficiency more in terms of cost-efficiency, maximizing throughput while minimizing errors and resource consumption. This interpretation reflects a focus on processing high volumes of applications with speed and precision. As one specialist in family benefits noted: “For us, time and precision are very important.”. Another added, “If we underpay them by even one cent, we must ensure they receive it.”

In addition, while equality is generally understood as fair and non-discriminatory access to services, regardless of characteristics such as gender, age, or ethnicity, specialists in social services and social benefits describe this value differently. For those working in social benefits, equality means applying rules consistently and ensuring that decisions are made with uniform speed and accuracy. As one specialist put it: “I don’t care if you’re Black, White or LGBT, if you’re eligible, you get the benefits just like everyone else.”. In contrast, in social services, equality is understood more relationally. It emphasizes treating each individual with the same level of dedication, empathy, and respect. As a specialist explained, “Each person has a different story. I try to handle their issues in the same respectful way, without letting personal feelings affect how I treat them”. One specialist framed equality this way: “I might be an expert in the labor market, but the client is the expert of their own life. So we are equals. I can only offer support, they have to make decisions about their lives themselves.”

Participants across both groups demonstrated a broadly consistent understanding of the remaining values, as described below:

- Transparency: Clients have the right to know how decisions are made, which systems are used, and what criteria are applied. Public servants should be able to clearly communicate this information upon request. Four specialists in the service group link honesty with transparency, emphasizing that it means “being honest about how decisions are made, not just transparent about one part while concealing another.”
- Diversity/Inclusiveness: Services and benefits should be accessible to all groups in society, particularly marginalized populations. In the context of digitalization and automation, interviewees emphasized the importance of maintaining alternative service channels for people with disabilities or low digital literacy. “The other part is specifically for our team or our target group, is that we have to carefully manage and see that all of those information systems are accessible for the people that need to use them” – Specialist in accessibility service for people with disability.
- Explainability: Particularly relevant in cases of rejection, public servants are required to provide a clear rationale for decisions, either by email or phone. When automation tools are used to support or make decisions, public servants must be able to explain the logic behind those decisions to clients.
- Privacy: the data of clients are protected and not disclosed in any circumstances without being authorized and mandated by the regulations. One specialist describe the importance of this value as: “If I were the person who comes here for housing orr subsistence benefit,

I would not be happy if there was another person hearing my situation”. “Privacy means what I am talking to you in this room is not heard by anyone in the next room”.

- Autonomy: One specialist in child custody described autonomy as the freedom and independence of public servants to think critically and make decisions within the legal boundaries. A housing service specialist expressed a similar view, adding that autonomy also applies to clients—specifically their freedom to choose how to access services and interact with public servants: “People have different ways of thinking, so as a public servant I have to respect the client’s autonomy, how they want the service to be delivered, how they want to interact with me, and how they engage in the evaluation process. No forcing or one-sided commands.”

Finally, some values are mentioned by only one public servant. However, it is observed that other public servants acknowledged their relevance, even if they did not consider them top priorities. These values are often assumed to be already met through existing standards and regulations:

- Interoperability: One specialist working with workability benefits highlighted interoperability as the integration of information systems that allows better data exchange and communication between organizations. Her current tasks require navigating multiple systems and manually processing large volumes of data, leading her to stress this value: “I go back and forth between multiple systems and evaluate a lot of data manually. Integration would make it easier“. In contrast, other interviewees did not consider this a pressing issue. Social service specialists viewed cross-system work as necessary for ensuring decision quality, while those in other benefit domains said it only occurs in exceptional cases, which they found acceptable.
- Security: is perceived to closely link to privacy, security refers to safeguarding client data through strict access controls. A specialist in accessibility services described it as ensuring that only authorized personnel can access certain types of information. While all interviewees recognized the value of security, most placed greater emphasis on privacy, because they assumed that the current security mechanisms already comply with modern standards and regulations. One specialist in family benefits explained: “Security measures for public servants in Estonia are already strict. I’m not allowed to take my work laptop outside Estonia. If I use it outside the office, several protocols must be followed. And if I access someone’s data without proper justification, IT will call and ask me why”. Another added: “I think our system’s protection against unauthorized access is strong. But since we often talk to clients in person, privacy is even more important.”

6.2 SRQ2: What is the Current Level of Process Automation in Their Areas of Work?

According to the interviewees, 5-7 years ago, there were hardly any systems or tools that supported the automation of the evaluation processes. By using the framework of Roehl, (2022), we are able to better elaborate and map out the level of service automation 5-7 years as in the Figure 4 below. The labels with blue color are social services, the labels with green color are social benefits, and the labels with red color include both services and benefits.

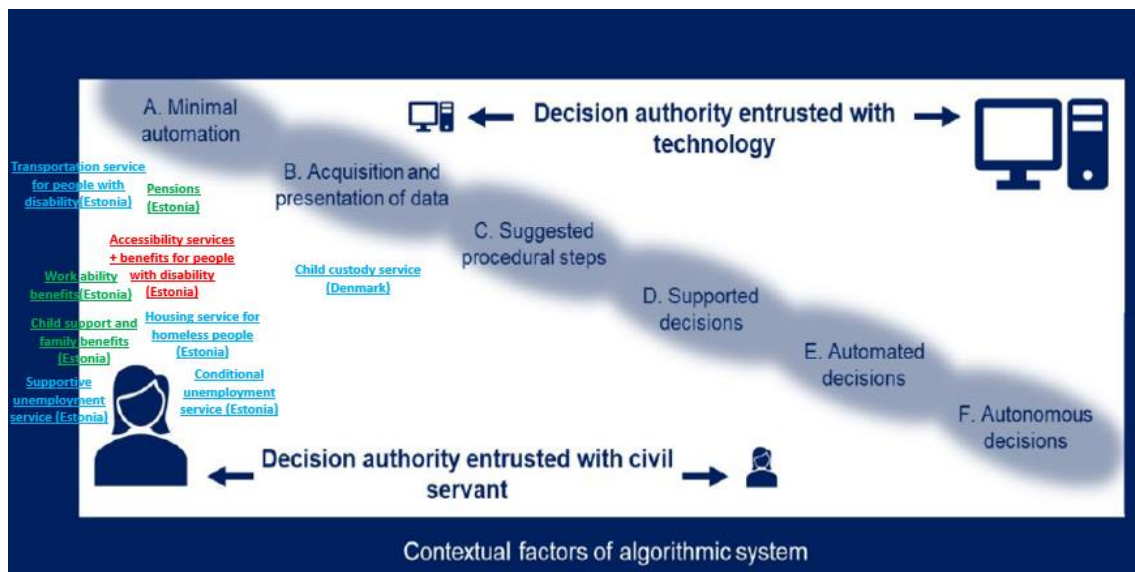


Figure 4: Level of Process Automation in Social Welfare 5-7 Years Ago

The mapping shows that 5–7 years ago, before the technological advancements and full integration of information systems like SKAIS, OTT, and RIK, most social services and benefits in Estonia were evaluated and delivered with minimal automation. The initial contact between citizens and caseworkers typically took place in person, with little to no use of online applications. Required documents were mostly submitted on paper, and relevant information was manually entered into information systems through scanning or basic processing tools like Microsoft Word, and Excel. Public servants then manually calculated the necessary indexes and assessed applications based on legal eligibility criteria, exercising full authority and discretion. If necessary, public servants required a meeting in person or conducted a home visit with the citizen to retrieve more data. Once a decision was made, if the case involved benefits, citizens would receive them either in cash or by bank transfer. If the case involved social services or a rejection, citizens were notified by email or phone, along with justifications or further instructions for accessing services. An exception to this was the Danish Agency of Family Law, which already had relatively stable and sophisticated databases in place 5–7 years ago, allowing public servants to retrieve relevant citizen data to support their evaluations.

It is also important to note, according to interviewees, that the eligibility criteria for social services are often less uniform and subject to frequent changes, while the criteria for social benefits are more consistent. These criteria for social services varied across regions, granting public servants a considerable degree of authority, discretion, and flexibility in their decision-making. As a result, administrative decisions related to social benefits are typically highly structured, addressing routine and repetitive issues in a standardized manner. In contrast, decisions in social services are often semi-structured or unstructured, with some aspects of the assessment process being defined while others vary depending on the case. These decisions are not uniform and can differ significantly from one case to another.

Nowadays, more information systems and technologies have been implemented, leading to comprehensive changes in the processes, from which an apparent divergence between social services and benefits starts to occur. The changes in terms of decision authority entrusted with technology are illustrated in Figure 5 below. The discussion will be subdivided into 2 sections, one for social services and one for social benefits.

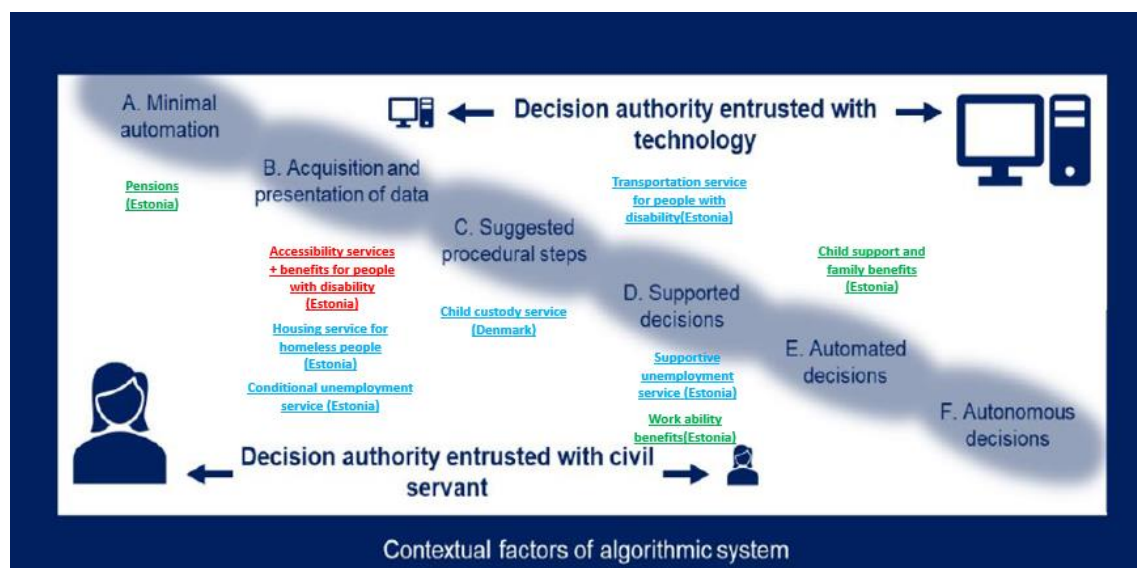


Figure 5: Level of Process Automation in Social Welfare Currently

6.2.1 Social Benefits

Regarding social benefits, there is an extensive technological application for the evaluation of work ability benefits and child support and family benefits, while pensions remain at a minimal automation level. All the social benefits discussed in this section are in Estonia. Citizens can apply either online through the self-service portal by logging in and completing the application, or offline by visiting a regional office of the Unemployment Insurance Fund. In-person assistance is available through case managers, and applications can also be submitted by phone, email, or post.

When applications are submitted through non-digital channels, public servants are responsible for manually entering the information into the system.

Once the application is in the system, the RIK system automatically processes and evaluates the data based on pre-defined parameters and eligibility criteria. It pulls information from multiple national databases to conduct a preliminary assessment and verify the data. This process is largely automated, with no human intervention during the initial evaluation or decision-making phase.

For work ability benefits, once applications are received, public servants must request access to clients' health data from the Health Information System. This serves as a secondary source to verify the clients' responses and explanations in their applications. If there is any doubt, the expert team and doctors from the Unemployment Insurance Fund conduct an additional assessment, which may include a home visit to verify the information. Only after all necessary data is gathered does the decision-support system begin its analysis and produce a preliminary assessment. On the 1st day of every month, a designated public servant reviews all system-generated assessments and decisions. They check for accuracy and either approve or make corrections before final decisions are confirmed. After their approval, the system automatically sends the final decision to the applicant. While the automation streamlines the process, it is not without flaws. The system occasionally makes errors, such as: incorrectly ending benefit payments when an employment contract ends, without recognizing that the applicant might still own a business or have alternative qualifying conditions, or failing to account for continuity in eligibility when one condition ends and another begins within a 14-day window, leading to unwarranted payment interruptions. In such cases, the official has to approve or reject the system's recommendation to end someone's benefits, and approve new applications that were automatically assessed. However, not all parts of the processes are automated. The processes can be automated if the clients are Estonian citizens whose data and information are stored in the state database. If not, public servants manually review applications or documents submitted from abroad, respond to inquiries, mainly from applicants living abroad, typically via email, and make discretionary decisions in complex cases, often involving coordination with three other officials. However, these cases are rather rare.

Differently, the processing of family benefits in Estonia, including state family allowances, parental benefits, and maintenance allowances, is largely automated, though some aspects require manual intervention. State family allowances and maintenance allowances are universal and automatically granted when parents register the birth of their child with the authorities. These benefits are processed and delivered without the need for further application or approval from the recipients or public servants.

Parental benefits, on the other hand, are based on the parents' insurance contributions and income levels. The system automatically calculates the benefit offer based on data from state databases, and the offer is sent to the parents for approval. Once the parents approve the offer, the benefits are delivered periodically. In cases where data is missing or significantly deviates from the expected parameters, the system will automatically send reminder emails to the relevant public servant, notifying them of cases that need further review, approval, or confirmation. This is the manual part of the process. The system is fully automated if both the recipients and their children are Estonian citizens living in Estonia. However, if the family does not meet these criteria, they must submit an application manually or digitally, and the public servants will then evaluate and assess the application manually.

In Estonia, pensions, although the criteria are straightforward and the decisions are highly structured, are still processed manually due to several factors related to the nature of the target group and the complexity of the work involved. Many elderly individuals have limited access to digital technology and prefer in-person interactions, often visiting local authorities directly to apply for pensions. Another key reason is the reliance on physical paperwork. Pension evaluation and provision heavily depend on an individual's employment history, much of which is neither digitized nor available in state databases. This is particularly true for those born during the Soviet era, whose work and life records are often documented in handwritten Russian cursive. This group currently represents the majority of pension-eligible individuals in Estonia. To apply for pensions, elderly applicants must bring all relevant documents, as required by regulations (Sotsiaalkindlustusamet, 2025), to local branches of the Social Insurance Board. Public servants then manually collect, translate, analyze, and calculate the necessary information to process the pension applications.

6.2.2 Social Services

Most of the services in our sample fall into either Stage B: acquisition and presentation of data, or Stage C: suggested procedural steps. Only transportation services for people with disabilities involve automated technology to evaluate applications because the criteria are straightforward and the decisions are structured.

Accessibility services for people with disability and housing services for the homeless are primarily supported by technologies that help gather and present information. When a person has a need, public servants typically do not begin by listing the benefits the individual might be eligible for. Instead, the individual describes their situation and submits relevant documents. Public servants then check their personal data in the STAR system to verify their identity and determine whether they are already receiving other social benefits or services. If the information

is valid, the public servant continues with a conversation to gather further details before deciding which specific services or benefits might apply. In some cases, such as with accessibility services, a home visit may be conducted to assess whether the living environment is adapted to the person's disability needs and whether any assistive equipment, furnishings, or modifications are required. In cases involving homelessness, public servants may also visit the individual's relatives and work with the local district government where he/she reside, to gather additional background information.

In Denmark's child custody service, citizens can submit applications and relevant documents digitally. The system then retrieves and integrates all necessary information and suggests possible options for each step of the decision-making process, in accordance with the law. At each stage, it is the public servant who makes the final decision. Once a decision is made, the system proposes the next appropriate step and route based on that choice. It also pre-fills the decision letter with relevant information. Public servants must review the content, follow the procedural steps suggested by the system, and can revise any of the pre-filled text if needed. Each time a public servant selects an option, the system updates the letter with the corresponding information. Once the entire process is complete, the system automatically sends the finalized decision letter to the recipients.

In Estonia's unemployment consultation services, individuals can apply for support either digitally or in person. Within this service, two distinct types of service provision can be identified:

- Supportive unemployment consultation Service: This type targets individuals who are actively seeking employment and voluntarily engage with the support system. These clients typically benefit from guidance, encouragement, and access to relevant job-search resources. During the first meeting, applicants receive in-person training and guidance on job application techniques and skills. After this initial session, further in-person contact is typically not required. Employment consultants are responsible for monitoring the progress and employment status of many clients. The main purpose of the OTT system is to provide consultants with a quick summary of each client's situation (Vihalemm et al., 2025). In addition, OTT offers an overview of all clients based on its assessments, helping consultants prioritize cases according to the level of support needed (ibid). Consultants have to review and provide feedback on the accuracy of the OTT-generated scores for each client. If they disagree, they have to briefly explain why they find the scores too optimistic or pessimistic and determine the appropriate course of action for each case. While specialists retain the authority to override the AI-generated scores, feedback data shows that 93% of them find the OTT scoring accurate. In 4% of cases, the system is seen as too optimistic, and in 3%, too pessimistic (ibid).

- **Conditional unemployment consultation Service:** This type serves individuals with complex circumstances, such as those struggling with addiction, recently released from prison, or facing other significant barriers to employment, who may not be actively seeking work. In these cases, consultations primarily aim to ensure compliance with program obligations and may involve close monitoring, corrective measures, or sanctions when necessary. Unlike the supportive service type, the OTT system plays a more limited role here due to insufficient data availability. Multiple in-person meetings are typically required, during which caseworkers manually gather information on clients' motivation, personality traits, and job preferences. This qualitative input is then used to create individualized action plans and to continuously monitor progress, often through face-to-face meetings, emails, or phone calls. While the system can issue automatic reminders when clients fail to meet job-seeking obligations by the deadline, key decisions, such as whether to impose sanctions or recommend job placements, remain entirely at the discretion of the caseworker.

Finally, regarding transportation services for people with special needs in Estonia, both children and adults with special needs are eligible to use public transport services. To register for regular or occasional transportation, individuals can apply digitally through Tallinn's social transport information system, specifying the types of transport they require. The system automatically retrieves relevant information, such as personal data, disability status from the Social Insurance Board, and place of residence, to conduct an initial assessment and make a preliminary decision (e.g., approval or rejection). Public servants then review each case, gather additional information if necessary, and make the final decision. Alternatively, citizens can choose to submit their application by email or describe their situation over the phone. In such cases, public servants may conduct home visits to collect further details before determining the appropriate services to allocate. In these instances, the process remains largely manual.

6.3 SRQ3a: Perception of the Current Level of Process Automation

This section is structured as follows: Section 7.3.1 discusses how public servants perceive the current level of process automation and its alignment with the values they prioritize, under the theme "Process automation as a support tool and an enabler of prioritized values." Section 7.3.2 then examines their level of trust in automation, highlighting a theme of "partial trust." Finally, Section 7.3.3 addresses the perceived barriers to effective implementation of process automation.

6.3.1 Process Automation as a Support Tool and an Enabler of Prioritized Values

When being asked about which values are enabled or strengthened by process automation, all participants show a positive attitude and consider automation in social welfare as the enabler of

their prioritized values. The values enabled by process automation are illustrated in Table 5 below. A value highlighted in green indicates that it is enabled by process automation, while a value without a highlight indicates that automation has no impact on it at all

Table 5: Values Enabled by Process Automation

	Accessibility service for people with disability	Housing service for the homeless	Supportive unemployment service	Conditional unemployment service	Child custody services	Child custody services (managerial)	Accessibility services + disability benefits	Child support + family benefits	Work ability benefits	Unemployment insurance benefits (managerial)
1 st rank	Welfare	Welfare	Welfare	Cooperation	Welfare	Efficiency	Welfare	Justice	Justice	Transparency
2 nd	Equality	Autonomy	Efficiency	Equality, Transparency, Trust	Efficiency	Accountability	Equality	Transparency	Transparency	Explainability
3 rd	Efficiency	Transparency	Equality	Privacy	Transparency	Transparency	Inclusiveness	Efficiency	Efficiency	Welfare
4 th	Transparency	Privacy	Empathy	Welfare, Justice	Explainability	Explainability	Efficiency	Equality	Privacy	Solidarity
5 th	Explainability	Justice			Equality	Justice	Transparency		Interoperability	Justice
6 th					Autonomy		Security		Welfare	Efficiency

The findings indicate a significant shift in how process automation technologies are perceived by public servants working in the social welfare domain. Compared to 5–7 years ago, the adoption of automation, regardless of its specific level or scope, is now broadly seen as a positive development. Public servants across both the service and benefits groups express appreciation for the ways automation has enhanced their work, particularly in terms of improving data access, decision-making consistency, and service delivery efficiency.

The majority of public servants describe the automation technologies and information systems in use as tools for support, rather than decision-makers. These systems are primarily used to assist with data analytics, measurement, and the automation of repetitive tasks. For example, in unemployment services, automation supports data analysis; in accessibility services for persons with disabilities, it aids in data collection; and in custody or child support services, it facilitates the automatic sending of decision letters. In some cases, such as workability benefits, these systems can even provide preliminary assessments and suggest decisions to caseworkers. Among the various services and benefits, family and child support benefits are the most fully automated, requiring minimal human intervention. Nevertheless, the technology is still widely regarded as a working tool, not a replacement for human judgment. Specialists retain control by adjusting system parameters and overseeing its output.

In the service group, automation primarily supports the retrieval and presentation of data, as well as suggesting procedural steps within service provision workflows. Interviewees from this group emphasize how automation tools enable them to retrieve necessary data more quickly and in a more structured and user-friendly manner. In both Denmark and Estonia, the digitization of citizen data and the integration of multiple government databases have created a solid digital infrastructure. As a result, public servants with appropriate permissions can efficiently access comprehensive client information before proceeding with evaluations or interventions. For instance, they can verify a client's address, personal background, and whether the client is currently receiving any state benefits or services. This facilitates more informed and transparent decision-making, especially in complex cases where justification is required, for example, in situations where applications must be denied.

Public servants also link automation to broader value outcomes such as efficiency, equality, and citizen welfare. Efficiency gains are noted through reduced case processing times and the ability to serve more clients with fewer delays. Equality is enhanced as automation helps ensure that similar cases are treated similarly, reducing inconsistencies that previously arose from regional or individual discretion. Welfare, the central value for many in the service group, is seen as better supported when the systems support the services to be delivered in a timely, accurate, and fair manner. Previously, 5–7 years ago, the decision-making process was criticized for being opaque and inconsistent. Criteria often varied across municipalities and heavily relied on the subjective discretion of individual caseworkers. Today, automation has begun to formalize a portion of this process by enabling the standardization of certain criteria and workflows. Although discretionary judgment is still essential, especially in complex or sensitive cases, automation ensures that at least part of the evaluation process is guided by uniform rules, reducing arbitrary variation and reinforcing procedural fairness.

In the benefits group, automation is perceived as particularly valuable in reinforcing values such as justice, efficiency, transparency, and explainability. Unlike the service group, the benefits system operates with more clearly defined and legally codified eligibility criteria, which automation tools can directly support. Here, automation goes beyond data retrieval to assist in evaluating eligibility, calculating benefits, and generating automated decisions based on predefined parameters. Public servants in this group emphasize the advantages of automation in ensuring that decisions are made consistently, accurately, and without personal bias. The automated calculation of benefit amounts is viewed as more precise and impartial compared to human judgment, especially in high-volume environments. Additionally, automation has enabled organizations to handle significantly higher volumes of applications. One expert illustrated this by explaining that “We have a team of 70 people managing around 200,000 applications for family benefits each year.” This scale of operation would have been extremely difficult to manage

manually. In this way, automation is not only streamlining processes but also reinforcing organizational capacity, allowing public servants to focus more on complex cases that require professional judgment.

Moreover, once a decision has been made, clients typically receive prompt notifications, often via email, that include a clear indication of the outcome and, in cases of rejection, a justification for the decision. This strengthens both transparency and explainability, enabling citizens to understand the basis of the decisions affecting them. Interviewees note that such clarity not only builds trust in the public administration but also reduces the number of disputes or appeals, as clients are more likely to accept a decision they can understand.

Notwithstanding, all interviewees expressed confidence in their roles, indicating that they do not fear being replaced by automation. They emphasized their understanding of how the system functions, including the criteria it uses for decision-making. As one specialist in family benefits explained, “There are always cases that fall outside the standard rules, and we have to manually review them.” This perspective was shared by other specialists who noted that automation makes their work easier and more efficient while maintaining human oversight. One officer in unemployment services highlighted that she reviews every decision suggested by the system; if she disagrees with the recommendation, she must provide a justification and input her own reasoning.

Public servants from both the service and benefits groups broadly appreciate the improvements automation has brought to their work processes. First, automation reduces the risk of human error by supporting accurate data collection and, in some cases, partially or fully automating the decision-making process, reserving only the most complex cases for manual review. Second, it significantly reduces paperwork, as most data is now digitized, though exceptions remain, such as in processing benefits for foreign nationals or pensions for the elderly. Third, and as a result of the above, automation contributes to faster processing times. As one interviewee noted, in Estonia, benefit decisions are now typically made within 3 to 5 days, compared to several weeks just 5–7 years ago.

6.3.2 Partial Trust on Automation

All of the interviewees expressed partial trust in automation technologies and the information systems currently in use. While they generally view these systems positively, they also acknowledge that automation is not flawless and that errors or system failures may occur. The four interviewees who work directly with decision-support or automated systems expressed high confidence in the accuracy of automation for repetitive tasks and routine, stable cases. For example, an officer working with workability benefits estimated that 99% of system-evaluated

cases were accurate. Similarly, two specialists in unemployment services stated that “90% of the time, if the robot or the system says no, then most likely you will also get a no from a human specialist, so you are very likely to get the same answer.”

When asked how errors are typically identified, the responses varied depending on the degree of automation. In systems where decisions are suggested but still reviewed by a human (such as workability benefits or unemployment services), errors are usually detected during the manual review process by the caseworker. In contrast, for fully or semi-automated services like family and child support benefits, errors are most often identified after a client complaint or through periodic audits performed by expert specialists. One specialist explained: “We know our system may have weaknesses and some scenarios where it might make a mistake. Sometimes, we check manually. For example, you are entitled to child support benefits if you stay in Estonia, but people can cheat the system or just forget to update their data. So sometimes we filter data to check whether the kid is attending school in Estonia and whether the family is still eligible for the benefits.”

When asked why such errors occur, most interviewees pointed out that they lack a sufficient IT background to fully assess the technical causes. However, they consistently attributed most issues not to flaws in the system itself but to human error and data quality problems. As one specialist in family benefits put it: “They don’t say the system is doing wrong, they say you are doing wrong.”. Similarly, a child custody specialist noted: “It’s very much human error that creates faults in the system.”

These human errors may include applicants entering incorrect data, caseworkers using the wrong form, or someone accidentally clicking the wrong option. On the data side, problems can arise from outdated or inaccurate information in government databases or when a specific database fails to update or synchronize properly. Despite these challenges, most interviewees viewed such errors as occasional and manageable. They expressed a willingness to accept the risks of automation, believing that the overall benefits outweigh the flaws. Also, they express a high trust in the state database and infrastructure. A specialist in child custody services remarked: “Sometimes things can be a bit broken, but you have no choice but to trust the system and the data you have, because there’s just too much information.”. Another specialist emphasized that clients themselves understand the limitations largely because the agency clearly communicates the evaluation process to them: “We and the clients understand that the decision is automated and accept that there could be mistakes, because no human specialist could process an application in 1–2 hours.”

6.3.3 Barriers to Effective Automation

Interviewees identified several barriers hindering the adoption of automation technologies in social welfare. These include legal and regulatory challenges, administrative and process complexity, limitations in human and digital literacy, issues of social trust and user acceptance, and a mismatch between automation design and real-world practice.

Legal and regulatory issues arise primarily from the frequent changes, complexity, or vagueness of existing laws, which are difficult to translate into automated systems. Three interviewees pointed out that certain laws can be interpreted in multiple ways, leading to ambiguity in system design. A specialist in child custody service emphasized the overly optimistic assumptions embedded in some laws: “Laws sometimes assume everyone is a nice person who complies with the rules. In child custody cases, it is assumed that if one parent is unfit, the other must be suitable. But sometimes, both are equally unfit, something the system cannot easily reflect.” Additionally, a specialist in Estonia highlighted the fragmented organization of the welfare system, where services are provided by both the central government and local municipalities. Due to their high degree of autonomy, services may be implemented differently across municipalities, making it difficult to build uniform, interoperable systems for data exchange and service coordination.

Interviewees also noted complications arising from the use of multiple systems and databases that are not fully integrated or synchronized. As a result, the system used to assess benefit eligibility sometimes lacks access to critical data unless proper authorizations are obtained. In some cases, specialists emphasized that this is not a technical or design flaw but rather a regulatory issue. Privacy regulations limit the extent to which public servants can request personal or sensitive data from citizens, complicating efforts to automate needs assessments for services or benefits. For example, several specialists explained that they cannot access clients’ health data without both client consent and government authorization, as this data is considered highly sensitive. Consequently, this part of the evaluation process must be carried out manually. Without such data, automated systems cannot generate accurate or valid decisions. Furthermore, systems can be disrupted by failures in external databases and registries. One interviewee recounted an incident where the population register went offline for three hours, causing delays in the paternity leave application process for 20 fathers. Some received the benefit offers, but the offers failed to go through because one of the automated checks was not completed successfully.

Several interviewees also highlighted the challenges posed by frequent legal and regulatory changes, which often necessitate rapid system adaptations. These rushed changes can lead to system instability and occasional errors, requiring constant human oversight to monitor outputs and intervene when necessary. When errors are detected, specialists must often review cases

manually or coordinate broader technical fixes if the issue affects a large number of records. “There was one time when ten people called us within an hour to report an issue. We had to do a full system review and found 2,000 similar cases. We had to fix them all,” said one specialist.

Administrative and process complexity is especially evident in pension services in Estonia. Pension evaluation relies heavily on a person’s employment history, much of which is not digitized or recorded in national databases. Moreover, many of the relevant documents are handwritten in Russian cursive and lack standardized formatting, requiring extensive manual review and data entry.

Human and digital literacy constraints also pose significant challenges. Four interviewees highlighted the limited digital skills and access among vulnerable populations, such as elderly pensioners, people with disabilities, and homeless individuals. These clients often prefer in-person or phone communication over interacting with digital systems, resulting in low acceptance and trust toward automation. On the agency side, some social workers also lack digital proficiency. One specialist commented, “We have social workers who have been working for a very long time. Some are so used to their routines that they still prefer writing with pen and paper rather than using systems that could actually help them work more efficiently.”

A mismatch between automation design and practical realities was another concern. Two specialists expressed frustration that automated systems sometimes reflect political or institutional priorities more than the nuanced ethical judgments of frontline workers. A child custody specialist argued that: “This misalignment can compromise both efficiency and the well-being of the child”. Likewise, a housing specialist noted that although inter-ministerial policies aim to reduce the burden on clients by automating data checks, these processes are often slower than simply asking clients for the information directly. As she explained, “Manual verification of databases takes more time than getting the data from the client, and it ends up increasing our administrative burden instead of reducing it.”

Together, these insights reveal that while process automation has the potential to improve efficiency and standardization of administrative decision-making, its success depends heavily on context-sensitive design, legal clarity, user competence, and frontline worker autonomy. Without addressing these challenges, automation can inadvertently complicate workflows and weaken service delivery.

6.4 SQR3b: Perception of the Higher Level of Process Automation

In this section, the content is structured as follows: Section 6.4.1 outlines public servants’ preferred levels of process automation. Section 6.4.2 emphasizes the roots of their skepticism,

particularly the limitations of algorithmic logic in handling complex and human-centered scenarios. This theme is developed across two subsections: Section 6.4.2.1 discusses situations where contextual interpretation and situational nuance outweigh what can be captured in code, while Section 6.4.2.2 addresses data gaps, tacit knowledge, and the indispensable role of human interaction. Section 6.4.3 analyzes how higher levels of automation align or misalign with the values prioritized by public servants, presented separately for social services (6.4.3.1) and social benefits (6.4.3.2). Finally, Section 6.4.4 explores future aspirations and the conditional openness toward adopting more advanced forms of process automation.

6.4.1 Preferred Level of Process Automation

When asked whether automation technologies could take over more responsibilities from human specialists in decision-making for social welfare, most interviewees, across both service and benefit groups, expressed mixed responses, with the exception of one manager and one specialist from the benefit group with a positive attitude. The majority stated that current automation technologies, including Artificial Intelligence (AI), are not yet intelligent or reliable enough to fully replace human work due to the limitations of algorithmic logic. As a result, while suggesting areas that can be taken over by the automated system, they emphasized the need for continued human involvement to ensure data and decision quality, to account for emotional and situational nuances, and to interpret context-specific complexities. When asked about the extent to which automation was considered desirable in future work, responses varied across groups, as illustrated below in Figure 6.

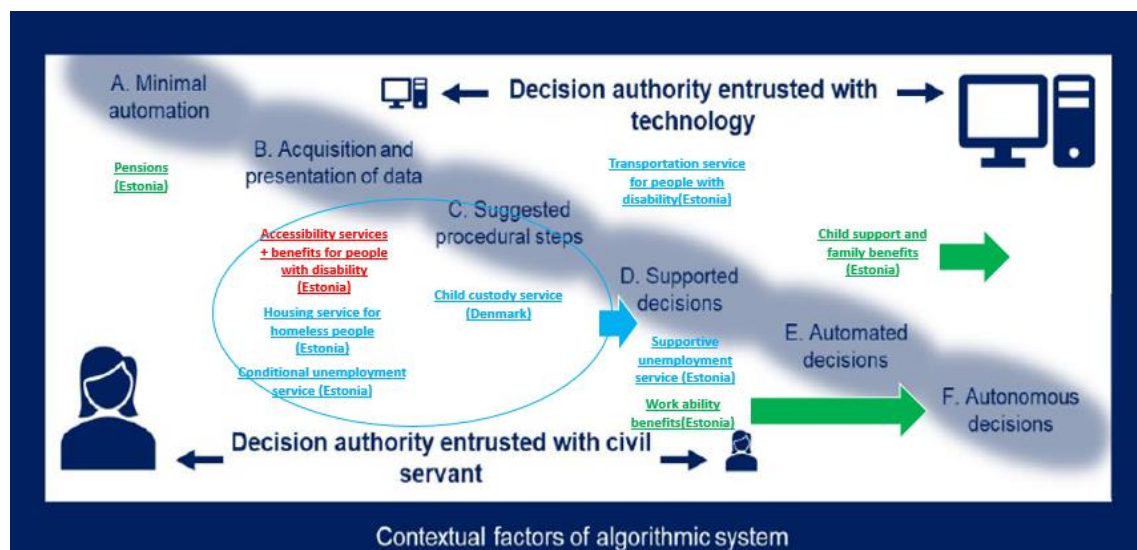


Figure 6: Desired Level of Process Automation in Social Welfare

The result suggests that the specialists in the service group preferred automation at the decision-support level, where systems assist by gathering data, making preliminary assessments, and

suggesting actions, leaving the final judgment to human professionals. They highlighted that their work is highly individualized, with each case being unique and unsuitable for rigid standardization. In contrast, specialists in the benefit group were more open to the idea of autonomous decision-making by process automation technologies because they have a large number of standardized cases for universal benefits. However, even among this group, there was a strong consensus that human oversight must remain in place. They agreed that humans should stay "in the loop" to monitor the system and handle complex or exceptional cases. One specialist said that: "There were cases where mothers continued receiving payments even though their children were older than three years old, and they were no longer eligible. Sometimes the system flagged it, but sometimes we had to find out ourselves. That's why I don't think we can leave the system running without supervision."

6.4.2 The Limit of Algorithmic Logic in Handling Complexity and Human Context

Many front-line specialists across both service and benefit groups emphasized the inherent limitations of algorithms in interpreting complexity, nuance, and human context. As a result, they argued that automation technologies are not capable of making or even suggesting appropriate decisions in complicated cases or performing complex tasks. According to interviewees, complicated cases are those that fall outside the system's predefined parameters and rules, where ambiguity exists, rules are unclear, data is missing or outdated, and factors such as income, health, legal status, and living conditions interact in non-linear ways.

Specialists in the benefit group who use automated or decision support systems described them as tools that operate strictly within programmed rules. "They calculate based on the data we provide them and make a decision as if the world is run in a linear way," remarked a specialist in family and child support benefits. However, as another specialist in accessibility services for people with disabilities noted, "Social work is not always linear, and there are things we are not yet able to code or program the system to judge like a human." Similarly, a specialist in housing services for homeless individuals added, "Automation systems just do fact checks—they can't evaluate human factors because every case is different."

Interviewees also provided concrete examples illustrating the limitations of automation in replacing human tasks. Two specialists pointed out that written communication and document interpretation remain especially challenging for automated systems. "Even we struggle to read and analyze documents written in Russian cursive, we tried using translation tools, but they didn't work," shared a specialist in family and child support benefits. Another specialist in workability benefits explained, "If the documents are in a foreign language, we still have to analyze them manually because our systems cannot recognize or process them accurately."

This section will have two sub-sections below to discuss in-depth and provide more examples on the limitations of automation systems, and explain why the human role and expertise should be maintained to ensure the quality of data and decision-making. In particular, subsection 6.4.2.1 will discuss cases in which algorithms are bound by predefined rules and struggle with nuanced decision-making, and how frontline workers intervene when the system misjudges transitions, relationships, or intent. On the other hand, subsection 6.4.2.2 discusses the practical limitations of background data and the importance of in-person interaction, intuition, and the professional expertise of specialists to capture client needs, detect psychological distress, or spot environmental/contextual factors.

6.4.2.1 When Contextual Interpretation and Situational Nuance Matter

Interviewees repeatedly emphasized how automated systems struggle to interpret changes in clients' status or eligibility with sufficient accuracy. As a result, they stressed that contextual interpretation and sensitivity to situational nuances, something only humans can provide, are often required. For example, in the context of workability benefits, if one qualifying condition ends, the system may immediately trigger the termination of payments. However, it often fails to recognize when a new qualifying condition begins within a short window, such as within 14 days, a scenario where support should in fact continue without interruption. Moreover, the system is not equipped to handle complex employment scenarios. One case involved a person who ended an employment contract but continued to operate a small business or hold a secondary job. The system, lacking a holistic view of such situations, interpreted this as a complete cessation of work and wrongly terminated benefits.

Specialists in child custody and family benefits described the complexities of their work and explained why algorithmic decision-making fails in cases involving relational or ethical complexity. One specialist noted that the system is incapable of understanding the nature of human relationships. It cannot judge accurately who is truly the caretaker or what kind of relationship exists between people. For example, if the court removes parental rights and assigns a new caretaker, but that person is the father's new wife, the system struggles to determine whether she should receive the allowance. These are not just legal questions; they are deeply human.

In another example, the same specialist emphasized that systems cannot weigh facts and assess the contextual severity of a situation based on ambiguous evidence: "If a parent reports concerns about alcohol abuse or addiction of the other parent and submits photos of empty alcohol cans, or writes in a report that the other parent consumes 7 beers a week, is that really abuse or addiction?"

”. Such judgment calls for these types of cases are fundamentally human and based on human expertise and cannot be made by rigid algorithmic rules alone.

A specialist in unemployment services further highlighted how the system occasionally misclassifies clients due to incomplete contextual understanding. For instance, she described: “if a person maintains an active account with a ride-sharing platform like Bolt, the system might interpret that as active employment, even if no income is being generated”. In such cases, the specialist must manually verify the situation and may have to request the client to deactivate the account before proceeding with benefit approval.

Another commonly cited limitation involves evaluating financial need based on bank account balances. For example, if a client has €2,000 in savings, the system may assume they are not in need of assistance. But what if they only have €500, or even just €50? That amount may not be enough to survive for a month. Determining what qualifies as “enough” depends heavily on the specific circumstances. If a person has a dependent child or an elderly family member to care for, the need for support increases. As one specialist explained, “We cannot just look at the number in their bank account; we have to look at the whole situation.”

6.4.2.2 Data Gap, Tacit Knowledge, and The Role of Human Judgement and Expertise

On the other hand, many interviewees, particularly those in the social service group, emphasized that the background data provided by clients or retrieved from databases is often incomplete, insufficient, or occasionally inaccurate. As a result, specialists frequently need to intervene directly by collecting additional data through in-person interactions, home visits, or contacting family members or other government agencies before making decisions. They stressed that this kind of information gathering is largely intuitive and based on their personal and professional experience, expertise, and tacit knowledge that cannot easily be programmed into any system.

Service specialists also highlighted that their clients are often vulnerable individuals whose psychological needs and behavioral reactions are difficult for machines to interpret. While certain types of impairment could be processed and documented digitally via self-reports or health data of the clients or from their doctors. The other types of critical issues are hardly recognized, requiring human expertise to detect and analyze. For instance, in accessibility services for people with disabilities, one specialist explained that even when two people have the same medical condition, their actual needs may differ greatly based on their environment. “We can only learn, through home visits, that one person lives in an accessible, stair-free home, while another is on the fifth floor with no elevator.”. Another added, “Small things like the height of a curb and stairs, the distance from the main road to someone’s door, or the quality and slope of the streets or

crossings, might seem trivial, but they matter a lot, and unless you've been in a wheelchair like me, it's hard to even notice, let alone explain them to construction workers.”

In services for homeless individuals or people with disabilities, specialists reported that clients often do not fully understand or articulate their needs. This necessitates face-to-face conversations for the specialist to grasp the underlying issues. Moreover, clients might try to game the system by exaggerating or omitting facts, which necessitates the need for verification through additional interviews, or contacting relatives is sometimes required. One specialist said “Our housing capacity is limited,” and “If someone was kicked out by their relatives, we contact the local district to understand the full context”.

This same specialist offered an example of a housing assessment: “If someone earns €800 per month and the apartment costs €400, the system might say they're fine. But it misses that upfront costs like deposit and agency fees could bring the total to €1,200, which is the money the client doesn't have. On the other hand, if a friend offers a room with no deposit, that changes the story. A human knows the possible scenarios, so he can judge and clarify these nuances. The system can't because they don't have such knowledge and data.”

In unemployment services, two specialists described how the algorithmic recommendation system (OTT) analyzes CVs and client input but sometimes fails to provide adequate support. They emphasized that clients also need emotional support, which the system cannot provide. As a result, they rely on their professional discretion and prefer in-person interactions to better support their clients. In one case, a client with a strong resume was matched with several companies but skipped interviews due to anxiety, something the system could not detect. The specialist had to talk to him directly to understand the problem and help him manage it. In another case, a client selected “customer support” as their preferred job, but the system offered mismatched roles because customer support has multiple meanings and characteristics, such as call center, receptionist, working in a helpdesk counter, or working remotely. The specialist later discovered the client meant remote work, a detail not recorded in the system. Another specialist explained, “A client applied for a job that required a driver's license, but the OTT system showed a low matching indicator (a red light) because the license had not yet been officially recorded in the state database, even though the client had already learned to drive on his own. After speaking with him, I decided to intervene, give him time to obtain the license, and update the job matching indicator accordingly.”

Other examples illustrate similar gaps. One client had severe stress and needed rest, which the specialist recognized only through personal interaction and then adjusted their job-seeking status accordingly. For foreign clients or those without Estonian work data, the system often flags low

job prospects, even when it is not necessarily true. “In such cases, I correct the system manually,” one specialist explained. “Talking to clients, I can pick up on things they may not even realize themselves. For instance, one client smelled strongly, which may have been the real reason they weren’t hired.”

6.4.3 Views on Values Prioritized in Areas of Work with a Higher Level of Process Automation

When asked how their prioritized values might be affected by the implementation of higher levels of process automation, such as automated and autonomous decision-making supported by emerging intelligent technologies like AI, public servants from the service group largely expressed concern that their values could be negatively impacted. In contrast, public servants from the benefits group generally viewed higher levels of automation as beneficial, provided that proper human oversight is maintained and the technical and regulatory barriers discussed in section 6.3.3 are addressed. These differing perspectives are summarized in Table 6 below, where red indicates that a value is negatively influenced by automation, green indicates a positive influence, and orange represents a mix of both positive and negative influences.

Table 6: Alignment of Prioritized Values with a Higher Level of Automation

Accessibility service for people with disability	Housing service for the homeless	Supportive unemployment service	Conditional unemployment service	Child custody services	Child custody services (managerial)	Accessibility services + disability benefits	Child support + family benefits	Work ability benefits	Unemployment insurance benefits (managerial)
Welfare	Welfare	Welfare	Cooperation	Welfare	Efficiency	Equality	Justice	Justice	Transparency
Equality	Equality	Efficiency	Equality, Transparency, Trust	Efficiency	Accountability	Diversity	Transparency	Transparency	Explainability
Efficiency	Autonomy	Equality	Privacy	Transparency	Transparency	Efficiency	Efficiency	Efficiency	Welfare
Transparency	Transparency	Empathy	Justice, Welfare	Explainability	Explainability	Transparency	Equality	Privacy	Solidarity
Explainability	Privacy			Equality	Justice	Security		Interoperability	Justice
	Justice			Autonomy				Welfare	Efficiency

The findings suggest a clear contrast between the two groups. While all public servants emphasized the necessity of human oversight and judgment (as discussed in earlier sections), the majority of those in the benefits group agreed that a higher level of process automation supports their prioritized values. Only one interviewee in this group voiced concern about efficiency. A manager in the benefits group noted that automation could both strengthen and undermine values like transparency, explainability, and efficiency if not properly managed. On the other hand, specialists in the service group, with the exception of those in managerial roles, warned that higher levels of automation, especially when public servants have reduced decision-making authority,

could negatively affect values such as equality, diversity, transparency, explainability, security, trust, empathy and ultimately, the welfare of citizens. Nonetheless, most also acknowledged that automation could enhance values like efficiency, transparency, explainability, privacy, and justice under the right conditions. To ensure clarity, the perspectives of each group will be discussed separately in the subsections that follow.

6.4.3.1 Benefit Group Perspective - Alignment of Higher Level of Process Automation with Prioritized Values

The majority of public servants in the benefits group believe that a higher level of automation in social welfare, supported by artificial intelligence, can significantly enhance efficiency and citizen welfare. They argue that as automation becomes more intelligent, it can handle larger volumes of applications and process more complex cases without human intervention, doing so more accurately and consistently than humans. This, in turn, would reduce the manual workload and ensure that clients in exceptional situations, such as foreigners or Estonians working abroad, receive their benefits as promptly and accurately as those in more typical cases.

Furthermore, automation is seen as a safeguard for justice and equality, as it minimizes human bias and error, which could otherwise compromise compliance with laws and lead to discriminatory decisions. One interviewee summarized this sentiment by stating: “Automated systems don’t care if you are Black or White, or what background you have. As long as you fit the criteria, you get the benefits.”

In addition, interviewees believe that more automation can strengthen transparency and explainability, since decisions are based on predefined rules and parameters created by humans. These rules can be traced and communicated clearly to clients or the public. As one interviewee remarked: “Even with clear rules written on paper, a human specialist sometimes struggles to explain why they made a particular decision.”

Privacy and interoperability is also perceived to be better fostered under a higher level of process automation. Since machines can handle data without human involvement, the risk of data misuse is reduced. One interviewee humorously noted: “Robots or machines don’t tell your story in a bar,” while another added: “Let the systems talk to each other so we remove the risk of people logging in and using the data wrongly.”. Another added: “It would be better if the systems communicate between themselves to request and retrieve sensitive data, so we don’t have to go back and forth between different systems”

Despite these benefits, most specialists acknowledge that manual work is still necessary, particularly because some required data is not yet digitized, or cannot be easily digitized or

processed automatically. Tasks such as translating and interpreting documents in different languages still require human input. However, many believe that future improvements in digitization and data integration could pave the way for further automation.

Only one interviewee and a manager in the benefits group raised concerns about the risks of advanced automation, particularly regarding explainability, transparency, and efficiency. The manager warned about the "black box" issue: when AI systems make decisions using complex internal logic that humans cannot easily trace or understand. While decision criteria for social benefits may be standardized, he noted that not all regulations are black-and-white. There are gray areas where an automated system may make a legally questionable decision that humans cannot easily justify.

Both the manager and one interviewee also pointed out that while automation may be faster, it lacks human intuition and contextual understanding, especially in cases involving human relationships or sensitive life circumstances. This could lead to errors that ultimately require human intervention to correct, undermining the very efficiency automation aims to achieve.

6.4.3.2 Service Group Perspective - Misalignment of Higher Level of Process Automation with Prioritized Values

From a contrasting perspective, specialists in the service group, while acknowledging the benefits of automation and its positive impact on certain prioritized values, emphasize that further automation may harm their core values and negatively affect their clients. In their view, increasing automation is closely associated with the replacement of human roles and the erosion of human interaction, which they see as essential to effective service delivery. This shift brings several important implications.

First, specialists argue that the tacit knowledge required to fully understand a client's situation cannot be captured by automated systems. Robots are not capable of interpreting complex contexts, recognizing subtle human cues, or considering emotional and social factors beyond their programmed parameters, as discussed in the section 6.4.2. When asked whether automation could support them by handling simpler cases, allowing specialists to focus on more complex ones, some expressed tentative agreement. However, others were skeptical, emphasizing that each client's situation is unique, requiring tailored approaches that often go beyond what standardized systems can accommodate. These approaches may include requesting additional documents, contacting relatives or local municipalities, or conducting home visits. As a result, drawing a clear line between "simple" and "complex" cases is often unrealistic. A specialist working with vulnerable clients in conditional unemployment services shared a reflection: "Clients that come to me usually don't know that they have big problems unless I talk to them and figure it out

myself. If they assume they're 'normal cases' and choose to interact with the system rather than a human specialist, it won't help them, it could make things worse.”.

Second, even when systems are able to obtain contextual understanding, there remains the risk of algorithmic bias. As three specialists pointed out, AI and automated systems are trained by humans and rely on human-generated data, meaning they inherit the biases of their creators. One housing service specialist explained: “All algorithms and systems are created by people who have their own view of the world. So, how can we judge that they are objective or are they, somehow, subjective?”. Such biases can result in discriminatory decisions, leading to the exclusion of certain groups.

Third, the specialists worry that the increased reliance on automation will eliminate human communication, reduce the demand for social work professionals, and instead favor staff with IT backgrounds. These individuals, they argue, may lack the contextual understanding, trust, and empathy needed to address the complex and diverse needs of vulnerable populations, especially those with limited access to digital tools. In this study, the client groups include people with disabilities or health issues, individuals experiencing homelessness or addiction, and those recently released from prison.

Two specialists emphasized: “Sometimes, the people who come to us do not need a service, what they need is someone to listen and hear them.”. A specialist working in conditional unemployment services added: “The people I work with are usually alone and neglected. In-person communication is important because they need encouragement and motivation to feel they are still welcome in our society and part of a “social sphere””. Another specialist further explained: “My skill and job is also to observe. I don't think machines can detect things like tone of voice, mood, or even smell. Looking at data in the system, everyone seems like a normal person”. Finally, a specialist reflected on the value of face-to-face communication: “I think in-person meetings help resolve things and allow us to understand each other better. In my case, when I contacted some clients by email or phone, they thought I was cold or angry, maybe because of my voice or writing style. But when they met me in person, they realized I was kind to them, that I was human too, just like them. After that, they wanted to come back and see me again.”

Fourth, one specialist expressed concern that full automation could centralize data access, consolidating control within a small group of technical experts or government entities. While this might be done in the name of protecting privacy, it could paradoxically restrict data access for professionals who need it to act in clients' best interests. This centralization raises concerns about control, surveillance, and power asymmetries.

Collectively, these factors risk the dehumanization of social services, potentially leading to client disengagement and a decline in core public values such as equality, diversity, security, privacy and ultimately welfare. In addition to these concerns, two interviewees criticized how automation initiatives are often implemented in a top-down manner, reflecting the discourse and political agenda of high-level decision-makers. These projects may lack a grounded understanding of frontline realities, which can result in systems that are, as one child custody specialist described, “Overburdened with ticking every box, bureaucracy, and being politically correct.”

There is also a tension between justice and autonomy and welfare. Rigid systems could limit specialists’ discretion and reduce their role from active decision-makers to passive executors of system-generated decisions. This threatens their professional autonomy, even though many believe they positively contribute to justice by ensuring compliance with laws and regulations. One specialist illustrated this dilemma:

“Sometimes I don’t follow the rules, even though it’s not allowed. Some clients missed deadlines or failed to show up for consultations. According to the rules, they should be sanctioned. But I knew they were going through a hard time, and I trusted they had tried their best. I didn’t want to ruin the trust and cooperation we had built, so I just gave them a new deadline without asking for proof, as the law requires. With AI and more advanced automation, I don’t think that would be possible. It’s like two sides of a coin.”

Two interviewees described how automation might restrict their flexibility and autonomy to act in clients’ best interests, either due to rigid workflows or misallocation of cases. They stated: “With AI, our scope might be limited. We won’t have the freedom to make certain decisions or ‘shortcut the process’ even when it clearly benefits the client.”. Another powerful example was given by a child custody specialist:

“Recently, the government adjusted the criteria for parental visitation rights. We now face cases where parents meet the formal criteria, yet clearly shouldn’t see their children due to alcohol or drug abuse, violent behavior, or psychological disorders. We are forced to create permits for people who are not eligible. In some cases, we can use our professional judgment to delay or stop the process while gathering more evidence. But if the system is fully automated, it will force us to do what the AI, or the politicians, want, not what is best for the child.”

From a managerial standpoint, there is a sense of cautious optimism about the role of automation. While acknowledging that not all caseworkers are enthusiastic, some feeling constrained by increased oversight, others concerned about reduced staffing or diminished quality in client relationships, the manager maintained that, if responsibly designed and governed, the long-term

benefits of automation will outweigh its downsides. According to this perspective, automation powered by AI or machine learning can improve efficiency, transparency, explainability, and justice. For instance, intelligent systems could monitor each step of a case handled by a caseworker, including the time spent, actions taken, and associated documentation. The system would also be capable of analyzing, segmenting, and categorizing cases, then allocating them to staff along with estimated time requirements, thereby improving both operational oversight and resource management.

This, it was argued, would not only give management a more comprehensive overview of front-line operations, but also allow timely intervention and support for caseworkers. Such capabilities are particularly useful for evaluating performance, as key indicators like case duration, number of cases handled per month, and actions taken would be systematically tracked and quantified, leading to greater accountability and transparency. Based on this data, the organization could also better justify decisions such as offering additional training, increasing recruitment, or adjusting resource allocation.

Furthermore, the manager emphasized the potential of process mining and modeling tools to optimize workflows and even identify needed adjustments in legislation. “Many regulations need to be changed, but without clear evidence of the problems, it’s hard to convince higher authorities,” the manager noted. In this sense, having reliable system-generated insights could lead to better outcomes for citizens in the long term.

Regarding communication with clients, the manager advocated for the use of chatbots as the first point of contact, especially given the difficult interactions caseworkers sometimes face. The manager explained: “If people knew how to handle their lives and families, they wouldn’t come here. When they do, they might act unpredictably, such as being rude or even threatening our caseworkers. For example, if they lose custody of their child”. In such cases, chatbots are seen as a protective buffer, preserving the safety and mental well-being of staff: “I know our caseworkers have a big heart, but it is unreasonable and unethical to let them be harassed or threatened. A client can speak to a robot until they calm down and behave respectfully before talking to our employees or not at all.”

6.4.4 Future Aspiration and Conditional Openness Towards a Higher Level of Process Automation

While many specialists, particularly those in frontline service roles, express concerns about the future of automation, they also outline several conditions that must be met for them to be open to its implementation.

First and foremost, any future process automation project must ensure inclusivity and build trust among both clients and public servants. Inclusivity means that the diverse needs and concerns of different client groups are considered in the system's design. For example, specialists emphasize the importance of maintaining alternative access channels for clients who may struggle with digital tools. As one specialist working with people with disabilities noted: "We have clients with mobility impairments or intellectual disabilities, we need to think about how to ensure they can still access our services.". Trust is equally crucial. Without it, clients may reject the system altogether. A specialist in housing services for homeless individuals explained: "If my clients know they're talking to a chatbot, they will just stop using the service because they don't believe it can help them."

Secondly, the need for strong privacy safeguards and human oversight is a recurring theme. One specialist suggested clients should have the right to refuse the use of their data if it is too personal or sensitive: "Maybe the system should always ask for permission to use certain data, just like choosing which cookies to accept on the internet.". More importantly, six interviewees across both service and benefit domains stress that full automation is not feasible. Human oversight is necessary not only for monitoring the system but also for interpreting unique client situations. One specialist said: "There will always be cases with special conditions and human factors. Until robots are as intelligent as humans, we cannot trust them with all types of decisions, we can only use them to support parts of the process.". Another specialist added: "We, the specialists, are the empathetic part of the system. Robots don't have empathy. If someone misses a deadline for submitting a document, say, because they were hospitalized, the system might cut their benefits without considering the reason. Humans are needed to make those judgments."

Thirdly, interviewees also highlight the importance of system readiness and legal clarity. This includes proper system integration, seamless data exchange, and stable regulatory frameworks. In Estonia, for example, specialists report that different welfare agencies operate separate systems, requiring manual work to gather the necessary data for decisions. Specialists in unemployment services reported that both they and their clients still had to manually complete forms detailing the clients' employment history and status, such as their last working day, professional background, and education, before accessing unemployment services or being registered as unemployed. They suggested that, "If data from various state databases, such as employment and education registers, were exchanged automatically, we wouldn't have to do this anymore." Additionally, they highlighted that when a client secures a job, they must manually enter information such as the company name, employment duration, and salary. As one specialist explained, "The naming conventions in our system and the state company registry are not fully compatible, so I have to rewrite the information to ensure it's presented according to our

organizational standards”. Another specialist provided a common scenario: “If an elderly person applies for 24/7 care in a nursing home because they can no longer live independently, now we need a paper statement describing their conditions from their doctor. But if we were connected to the medical system database, we could already see that the person has no visitors, and that the doctor has noted their condition and recommended this care.”. Others praised the data integration between Finland and Estonia, which allows benefits to be delivered more efficiently, reducing paperwork and manual communication. Regarding legal frameworks, two interviewees, including a manager, pointed out that some benefits are governed by clear, stable rules, making them suitable for automation using templates or standardized decisions. However, other regulations are vague or contradictory, which means automation must be approached with caution.

Finally, the digital literacy and readiness of both clients and staff must also be considered. Some specialists note that future generations may be more open to automation: “Automation in pensions isn’t feasible right now, but in 30–40 years, when people in my age group retire, it will be. Our data is digitized, and we’re used to using IT systems.”. Another specialist added: “Young people prefer using digital tools and avoiding in-person interaction. That gives us a good basis to promote automation in some areas.”. Nevertheless, internal staff training remains essential. Public servants must be equipped to use new systems effectively while preserving their professional expertise and ensuring service quality.

Notwithstanding, the specialists mentioned specific technologies that could support their work and reduce workload. For instance, three interviewees saw chatbots as useful for handling frequently asked, simple questions, freeing up specialists to focus on more complex issues. Other suggested technologies include image recognition tools to process scanned or non-standard documents, often submitted by clients from other countries. Some also advocated for automating communication workflows between agencies or with external partners and clients. As one put it: “It would be great if an AI or robot could process incoming applications and automatically send requests to the police or municipalities for additional information. That way, we wouldn’t have to send emails or make calls ourselves”. Another specialist added, “We still have to contact our clients by email or phone to remind them about upcoming job-seeking deadlines, or follow up multiple times, sometimes up to three reminders, before issuing a sanction. If there were a system that could automatically monitor the action plan that we input and send these reminders, it would save us a significant amount of time for other tasks.”

7 Discussion

The findings are consistent with previous studies showing that process automation elicits mixed reactions from employees, depending on their roles, values, and the context in which automation is introduced (Asatiani et al., 2020; Lindgren, 2024; Toll et al., 2022). These studies show that while some employees see process automation as a tool for improving efficiency and reducing administrative burden, others might see it as a threat to professional autonomy and other quality aspects of their work. This study echoes and deepens those insights by showing how front-line public servants, particularly those in social services, often express concern over the potential misalignment between automated processes and the complex, human-centered nature of their work.

At the same time, the findings reveal a dominant view among public servants that automation is most valued when it functions as a supportive tool, particularly in helping to gather and synthesize data from multiple sources and systems. Process automation is also appreciated in its role as an expert system, offering preliminary assessment, advice, or second opinions to inform decision-making, while ultimately leaving the final administrative decisions to human discretion. This perception closely aligns with the findings of Ammitzbøll Flügge et al., (2021), who also emphasize the importance of maintaining human agency in automated environments.

Furthermore, the study extends the framework of Toll et al. (2022) by distinguishing between two groups within the operational staff group: those in social services and those in social benefits. Each group prioritizes different values in their work and views process automation differently across the three levels of automation of Roehl (2022), including: decision support, automated systems, and autonomous systems. While managers and benefits specialists were relatively open to all three levels with the condition of preserving human oversight, specialists in social services were generally only optimistic about decision-support systems and more skeptical toward higher levels of automation, as shown in Table 7 below. The finding also confirms the divergence between managerial (or the Champion) and specialist perspectives: managers emphasize strategic outcomes such as accountability, efficiency, and policy alignment, while specialists are more concerned with how automation affects day-to-day work and client interactions. These contrasting perspectives underscore the importance of inclusive and participatory approaches in designing and implementing process automation in social welfare, ensuring alignment between institutional objectives and the lived realities of front-line staff.

Table 7: Summary of Findings

Stakeholder group			Dominant view of process automation as an enabler of prioritized value
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	Stakeholder role(s)	Value prioritized in their area of work	Decision Support	Automated Decision	Autonomous decision
The Digitalization Group	Champions	Efficiency, Transparency, Explainability	Optimistic	Optimistic	Optimistic
Operational staff	Operators (social services)	Welfare, Equality, Efficiency	Optimistic	Pessimistic	Pessimistic
	Operators (social benefits)	Justice, Transparency, Efficiency	Optimistic	Optimistic	Optimistic

The findings also suggest that values are a meaningful lens through which public servants articulate their attitudes toward automation. Using values-as-attitude helped interviewees express their opinions and articulate the trade-off and conflict between values in the different automation scenarios clearly and consistently. This framing allowed public servants to make sense of the compromises required in implementing automation. The study also found that the interpretation of some values, such as efficiency and equality, also varies across domains, confirming the arguments of Masso et al. (2024) and Bolin (2016) that values are socially produced and relational, shaped by individual and collective experience with automation tools. For benefit specialists, efficiency is about speed, precision, and consistency, objectives that naturally align well with automation. In contrast, service specialists define efficiency in terms of achieving meaningful outcomes for individual clients with the resources available, a definition less compatible with rigid automation systems. Likewise, equality in benefits is seen as uniform treatment through standard rules, while in services it involves equitable responses tailored to the varying circumstances of different individuals and groups. These differences underscore how automation can be perceived as either a tool for progress or a potential constraint, depending on the interpretation of core public values.

Notwithstanding, the findings further support the view that values can be potentially contradictory and conflicting (Rutgers, 2008), especially within the governance systems that integrate multiple stakeholders (Van Der Wal & Van Hout, 2009). For example, even within the same domain, managers and specialists prioritize different values: managers emphasize strategic goals like transparency, efficiency, and accountability, while specialists focus on operational concerns like client welfare and fairness. Service specialists, in particular, expressed concern that automation might promote transparency and efficiency at the expense of welfare and equality, despite all these values being legitimate and important.

Moreover, the insights from this study also reinforce the findings of Masso et al. (2024) that some values are universally shared across countries and individuals, while others are context-specific, depending on sectoral or personal factors. Across both Estonia and Denmark, commonly mentioned values included efficiency, transparency, privacy, autonomy, and explainability. Yet, some values appeared more dependent on sectoral or personal factors. For instance, equality and welfare were emphasized more in social services, while justice featured prominently in discussions of social benefits. Other values, such as interoperability, solidarity, and security, were mentioned only by a few interviewees with deeper knowledge in AI-related domains, suggesting that expertise and role specialization influence which values are appreciated. Finally, given the high level of digitalization in government and digital literacy in both countries, the study did not observe contrasting differences in how interviewees in Estonia and Denmark understood or described these values. This finding further supports the view that while local context matters, certain value frameworks may converge across digitally advanced public sectors.

The findings also suggest that process automation may introduce new, unforeseen errors from other parts of the organization, such as failures in data exchange with external registries essential for administrative decision-making, data inaccuracies originating from those registries, or misconfigurations due to changes in laws or regulations that are not properly reflected in the system. As a result, automation does not necessarily reduce the need for human involvement or free up time for public servants. Instead, it introduces new responsibilities that require specialized skills and expertise, particularly for conducting periodic checks to detect such errors, as mentioned by Bainbridge (1983); and Lindgren (2024). This was especially evident in the benefits group, where automated systems are widely used. According to public servants in this group, errors are detected systematically only when all decisions are manually reviewed. Otherwise, errors tend to surface randomly, highlighting a level of risk that may have serious consequences for clients. This underscores the need for a constant feedback loop mechanism to be developed and integrated into the service system to support continuous improvement, as emphasized by Vihalemm et al. (2025).

The findings also reflect a tension between the standardization inherent in automation technologies and the unpredictable, situational nature of professional practice. This tension highlights the importance of aligning system design with service delivery needs, as discussed in the work of Curry et al. (2017); Devlieghere et al. (2018); Gillingham (2018); and Hansen et al. (2018). At the current stage, most automation systems are typically built on predefined rules and data structures, which can struggle to accommodate the nuanced judgment and discretion required in frontline social work. The findings in this study, to some extent, echo the argument of Hansen et al., (2018); Curry et al. (2017); Devlieghere et al. (2018); Gillingham (2018), that the

performance of current automation technologies is poorly suited for addressing complex, individualized client problems that fall outside standard parameters. Similarly, consistent with the argument of Enarsson et al. (2022); Kvakic & Larsson, (2024); Monteith & Glenn (2016); and Rizk & Lindgren (2024), the study finds that discretion of public servants in administrative decision-making remains indispensable in certain domains, and the reduction of such discretion may disproportionately affect marginalized groups who often do not fit automated decision criteria. Frontline public servants emphasized that many service clients present with intersecting challenges, such as mental health, economic instability, or family violence, that require empathy, interpretation, and contextual understanding. These elements cannot easily be captured by algorithmic logic or predefined workflows, thereby limiting the applicability and perceived legitimacy, trustworthiness, and fairness of automated tools in such contexts (Ammitzbøll Flügge et al., 2021; Lee, 2018).

Notwithstanding their intended benefits, the findings suggest that the adoption of process automation technologies can introduce new dilemmas, create a need for renewed discretion, or motivate public servants to develop workarounds to compensate for the limited logic and rigidity of current algorithmic systems. This observation aligns with arguments made by Ammitzbøll Flügge et al. (2021); Devlieghere et al. (2018); Stein et al. (2015). For instance, in some cases, public servants still rely on verbal communication with clients rather than depending solely on data provided by automated systems, despite organizational mandates to increase efficiency through system use. Similarly, public servants in employment services may disregard suggestions from automated decision-support tools (OTT systems) and instead engage with clients through informal channels to gather the information needed for more client-oriented decisions. These practices highlight that the introduction of process automation does not always result in the transparency, explainability, and justice that managerial levels aim to achieve. On the contrary, it may produce second-order effects, where informal practices and workarounds by public servants unintentionally undermine the very goals of automation, such as consistency, fairness, and procedural clarity (Ammitzbøll Flügge et al., 2021; Devlieghere et al., 2018; Hansen et al., 2018).

As noted by Gödöllei & Beck (2023), there is limited understanding of the conditions under which employees develop opposing perceptions of automation. This study contributes to filling that gap by offering nuanced insights into how front-line public servants perceive process automation, highlighting the contextual factors that shape either positive or negative responses. While previous research often links negative attitudes toward automation to fears of job loss (Brougham & Haar, 2018; Koen & Parker, 2020; Shoss & Ciarlante, 2022), this research finds that job security is not the primary concern among participants. Also, the study finds no observable effect of seniority on public servants' perceptions of process automation, contrary to the findings of

Curry et al. (2017). Furthermore, this study suggests that their perceptions might be shaped by how well automation aligns with the values they prioritize in their work. These perceptions are further influenced by several contextual factors, including: the nature of data involved in their domain; the perceived technological maturity of the tools; levels of trust in government and its data infrastructure; and the characteristics and needs of the clients they serve.

- In terms of *the nature of data involved* and *perceived technological maturity*, social benefits work relies heavily on structured, quantitative data that is periodically updated and sourced from centralized government databases. This makes it well-suited for rule-based automation systems. Hence, most interviewees in the benefit group see that the process automation technologies do not discriminate and are less error-prone than humans. Hence, they can improve both efficiency and equality. In contrast, social services depend on qualitative, narrative, and case-specific data that is often unstructured and updated irregularly through client interactions and observations. This fundamental mismatch between the data requirements in social services and the perceived capabilities of current automation technologies, largely rule-based and designed for standardized processes, reinforces skepticism among service providers. These systems are seen as inadequate for capturing the complexity, context, and nuance essential to their work. As a result, it is suggested that while automation may be more readily applicable and effective in benefit administration, its use in service provision demands greater caution, careful design, and clear human oversight.
- Additionally, *the trust in the state and its data infrastructure*, especially in Estonia and Denmark, plays a key role in shaping automation acceptance. Most interviewees expressed high trust in the quality of government databases and saw this as a foundation for expanding automation to further minimize human bias and reduce error rates. Only a few specialists pointed out potential risks, noting that automation can reproduce existing biases or even amplify existing inequalities if trained on flawed data, and that discriminatory outcomes are still possible if systems are not carefully designed and monitored. This suggests the need for critical awareness and ongoing oversight in how data and algorithms are managed. Notwithstanding, the influence of process automation on privacy, security, transparency, and explainability was generally viewed positively by most participants. Many participants felt that full automation could help standardize decisions, protect sensitive client data, and improve security compared to manual processes. This trust in automation may stem from the belief that current systems already meet high data protection standards. As one specialist explained: “We have strict measures to protect privacy and security. If I log in to look at someone’s data, IT will ask

me why I did that.”. Only a few showed awareness of potential risks, such as the "black box" nature of some AI systems or the concentration of decision-making power among a small group of system designers. This suggests a limited awareness of the broader social and ethical implications of process automation. To address this gap, more training and education on the digital, ethical, and governance dimensions of automation should be provided to public servants, especially as systems become more complex, intelligent, and influential.

- *Client characteristics* represent another important contextual factor shaping public servants’ attitudes toward automation, extending beyond issues of digital literacy or accessibility. These characteristics include clients’ emotional needs, preferences, behaviors, and situational complexities. In the service domain, clients are often vulnerable individuals who require in-person interaction for emotional support and clearer verbal communication. They may also display unpredictable or mixed reactions, or even attempt to game the system. Their diverse needs and circumstances demand personalized approaches from specialists, which complicates automation. This complexity is not exclusive to social services; it is also evident in certain benefit areas, such as workability assessments, where specialists similarly express reservations about full automation. In contrast, specialists working in more standardized, universal benefit schemes, such as family or child support, tend to be more open to automation. These findings suggest that the perceived suitability of automation is closely tied to how specialists assess the complexity and variability of their client base.

For practical implications, we do not argue that process automation should be excluded from social services altogether, nor do we suggest that it should be universally applied across all types of social benefits. Rather, our findings point to the need for a measured, context-sensitive approach that acknowledges the diverse nature of public service tasks and the lived realities of frontline professionals. While automation can bring significant benefits, gains must be carefully balanced against the need for discretion, empathy, and human judgment in complex and sensitive service contexts.

One of the clearest findings of this study is that even the most supportive interviewees, those who see strong potential in automation, insist that human oversight must be preserved. This underscores the idea that automation should be used to support, not replace human expertise in administrative decision-making, especially in domains with high complexity (Ammitzbøll Flügge et al., 2021; Asatiani et al., 2023; Bullock, 2019; Gormley, 2016; Petersen et al., 2021; Van Looy, 2022). To ensure that automation initiatives are fit for purpose, we recommend that frontline specialists should be actively involved from the earliest planning and design stages. Their situated

knowledge, gained through direct engagement with citizens and systems, is critical to anticipating practical challenges and ensuring that automated tools truly serve the needs of both service providers and users. Designing automation in isolation from this expertise risks producing tools that are technically efficient but socially misaligned (Eikebrokk & Olsen, 2020; Ratia et al., 2018; Vitharanage et al., 2020). Furthermore, as previously noted, frontline specialists should be adequately trained and equipped with the necessary knowledge related to emerging process automation technologies and their capabilities. This is especially important given the rapid advancement of technologies such as AI, and machine learning, which often outpace both our ability to fully comprehend them and the speed of regulatory developments. Ensuring that public servants are informed and well-versed in the capabilities and implications of automation not only enhances the quality of discussions around implementation but also empowers them to safeguard core public values and protect the welfare of the citizens.

In addition to providing insights into the value-based reasoning behind differing attitudes toward automation in the social service versus benefit domains, this study also identifies several key enablers and barriers that influence openness to automation. Policymakers and public sector managers can use these findings as reference points to assess readiness, adapt strategies, and tailor communication when introducing or scaling automation projects. Importantly, we would like to emphasize that the goal is to initiate and sustain a meaningful and fruitful discussion with front-line public servants, not to bypass or manipulate their perspectives through political rhetoric. We also caution against using process automation as a political or managerial quick fix without a clear understanding of service-specific conditions. Without such inclusive and thoughtful engagement, automation efforts risk overlooking critical aspects of service delivery, inadvertently undermining core public values, and potentially leading to unintended consequences that affect not only organizational performance and legitimacy but also the well-being of social workers and, ultimately, the citizens they serve (Arts & Van Den Berg, 2025; Lindgren, 2024; Lindgren et al., 2022; Rizk & Lindgren, 2024; Whiteford, 2021).

Due to the limitations mentioned in section 4.3.3, we also urge readers to interpret the findings of this study with caution. The research focuses on Estonia and Denmark, two countries with advanced digital infrastructures, high levels of institutional trust, and extensive experience in automation in the public sector. These contextual factors likely influence how frontline social workers and specialists perceive and engage with automation tools. As noted by Kaun & Masso (2025); Masso et al. (2024), such familiarity with digital technologies and high government trust can positively shape attitudes toward automation. In settings where these conditions are lacking, resistance and skepticism may be more prominent, demanding alternative implementation strategies and engagement methods. Moreover, the Danish part of the study includes only two

interviewees. While their insights enrich the overall narrative, they should not be considered representative of the broader Danish public service context, and no comparative analysis between the two countries was intended or conducted. We also acknowledge sampling limitations related to coverage across service types. Not all areas of social services and social benefits are equally represented. In some cases, only one interviewee represents a specific domain. Their views, while valuable, may not capture the full diversity of perspectives in that field. It is also possible that certain types of services, such as those with more standardized processes, are more amenable to automation and thus more positively received by specialists. Conversely, benefits or services requiring professional discretion and contextual sensitivity may raise greater concerns about automation's appropriateness.

These findings point to several important avenues for future research. First, we call for studies that explore a broader range of social service domains and country contexts, especially those with lower levels of digital maturity, limited data infrastructure, and weaker institutional trust. While Estonia and Denmark provide valuable insights due to their advanced automation capacities and digitally competent workforces, other national or local contexts may present vastly different challenges. Comparative research across diverse institutional settings could offer a more nuanced understanding of how values and other contextual factors shape the adoption and perception of automation technologies.

Second, we encourage more empirical research to identify and quantify the barriers and enablers of automation in public services. Our findings suggest that contextual factors, such as the nature of data involved, perceived system maturity, client characteristics, and levels of trust in government and its data infrastructure, can shape public servants' views on automation and its perceived alignment with their core values. However, the relative weight of these factors and how they interact in different contexts remains unclear. Future studies should explore these dynamics systematically, potentially through mixed-methods or longitudinal research designs that monitor how these influences evolve over time.

Finally, while our study focused on how frontline workers perceive process automation as a general concept, we did not distinguish between specific technologies (e.g., rule-based automation, AI-driven decision support, machine learning). Further research could examine how different technologies, each with varying degrees of transparency, explainability, and discretion, are perceived and experienced in practice. Understanding the unique affordances and limitations of each technology type can help policymakers and system designers better align tools with service realities and professional values.

8 Conclusion

This study explored how front-line public servants perceive the use of process automation in their areas of work, with a focus on the social welfare sectors of Estonia and Denmark. Using a qualitative research approach, the study drew on 10 semi-structured interviews with professionals from both social services and social benefits. Projective and elicitation techniques were used during interviews to better understand participants' views, and the data were analyzed using both inductive and deductive methods.

The study addressed three main questions. *First, what values do public servants prioritize in their work?* The findings reveal that value priorities differ between domains. Social benefits specialists tend to place greater emphasis on justice and efficiency, reflecting a focus on rule-based fairness, regulation compliance, and consistent service delivery. In contrast, social service professionals tend to prioritize welfare and equality, emphasizing empathy, personalized care, trust, and fairness in interpersonal interactions. These differences influence how each group engages with and responds to automation. Despite their differing priorities, both groups value transparency and explainability.

Second, what is the current level of automation in their roles? Social benefits services tend to operate with higher levels of automation, often using decision support or an automated system. In social services, however, automation is more limited and used mainly for data gathering and presenting, with professionals continuing to rely on human judgment in most situations.

Third, how do public servants respond to automation in relation to their values? At the current level of process automation, all participants expressed a generally positive attitude. They showed partial trust in these systems, as the current level still aligns reasonably well with the values they prioritize. However, opinions begin to diverge when considering more advanced forms of automation. Social benefits specialists tend to be open and optimistic about automated and autonomous systems, as these align with their core values of efficiency, justice, explainability, and transparency, provided that human oversight is maintained. In contrast, social service professionals are more supportive of decision support systems but express skepticism toward higher levels of automation. They are concerned that such systems may reduce human judgment, discretion, and communication, elements they see as essential, given the complexity of their work and the needs of their clients. As a result, they worry that increased automation could undermine key values such as welfare and equality. In addition, differences in perspectives between frontline staff and managers were also observed, as managers often prioritize different values than those emphasized by staff within the same domain.

Based on the findings, several key insights emerge. (1) The perceived alignment between process automation and values is highly context-dependent. It is shaped by factors such as the nature of the data involved, the perceived technology maturity, the characteristics of clients, and the overall level of trust in government and its digital infrastructure. (2) The implementation and reception of process automation are influenced by the specific values and work contexts of public servants. Variations across domains, roles, and individual experiences result in different interpretations and evaluations of values and automation, often leading to tensions within organizations, especially between management and frontline professionals or between the service and benefit domains. (3) Public servants are more receptive to systems that support their professional judgment and enhance service delivery, such as those that gather necessary data, provide preliminary assessments or second opinions, and handle standardized or repetitive cases, rather than systems that constrain empathy, discretion, or meaningful interaction with clients. (4) The participatory, value-sensitive design approaches that consider operational realities and value interpretations within specific domains are important and necessary. (5) Human oversight remains essential, not merely to prevent technical failure or job loss, but to safeguard the welfare of the clients served, particularly in complex, human-centered service contexts. (6) Training public servants on the capabilities and implications of emerging process automation technologies is essential to foster effective collaboration during implementation and to safeguard public values.

This research contributes to the literature in several ways. It highlights how value perceptions are shaped by context, supports the use of values as a lens to study process automation, and expands existing frameworks by demonstrating clear differences between social services and social benefits. In particular, it supports the current literature that values are a meaningful lens through which public servants articulate their attitudes toward automation. Notwithstanding, the findings further confirm that values can be potentially contradictory and conflicting. Moreover, the study reinforces previous findings that while some values are universally shared across countries and individuals, others are highly context-specific, shaped by sectoral or personal factors.

The study also supports existing literature suggesting that process automation can introduce new, unforeseen errors from other parts of the organization. It affirms the persistent tension between the need for standardized, rule-based decisions, which automation enables, and the need for flexibility and discretion that frontline professionals often require. In this regard, process automation does not eliminate discretion in administrative decision-making but rather changes its nature. It confirms previous findings that the adoption of process automation technologies can introduce new dilemmas, prompt renewed forms of discretion, and lead public servants to develop workarounds to navigate the limitations and rigidity of current algorithmic systems. Furthermore, the study reinforces prior research showing that discretion remains indispensable in certain

domains of administrative decision-making and that reducing this discretion may disproportionately affect marginalized groups who often do not fit neatly into predefined automated criteria. These tensions reflect broader value conflicts among stakeholder groups and underscore the importance of designing process automation technologies with meaningful input from end users. Finally, this research challenges the dominant narrative in the literature by showing that job security is not a primary concern among participants and show limited impact of seniority on perception. It also contributes to the limited understanding of the conditions under which employees develop opposing perceptions of process automation, offering explanations and introducing contextual factors that shape how public servants interpret and respond to process automation in practice.

That said, this study has limitations. It involved a modest sample and did not include all areas of social services and benefits. As such, its findings may not fully represent all public servants. It also focused on general perceptions rather than evaluating specific tools in use. Future research should build on this study by exploring a wider range of social service domains and institutional contexts, particularly in countries with lower digital maturity and limited trust in public data infrastructure. Comparative studies could deepen our understanding of how contextual factors shape perceptions of automation. Additionally, there is a need to empirically identify and assess the specific enablers and barriers to automation in public services, ideally through mixed-methods or longitudinal approaches. Finally, future studies should distinguish between different process automation technologies to examine how their varying levels of transparency and discretion influence frontline workers' perceptions and value alignment in practice.

Declaration of the use of AI: Artificial intelligence (AI) tools, specifically ChatGPT based on the GPT-4o-mini model, were used during the writing process solely to improve the readability and coherence of the text. All data collection, analysis, interpretation, synthesis of the previous literature, and the core writing of this thesis were conducted independently by the researcher.

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Appendix

A Interview Guide

INTERVIEW GUIDE

(60 minutes)

1. Introduction (5 minutes)

- Self-introduce and explain briefly about the research objective, purpose & length of the interview.
- Assure the participants that:
 - o There is no right or wrong answer
 - o The information of the participant will be kept confidential and anonymous
- Explain the reason for audiotaping (just for documenting purposes) and ask for permission to record the conversation
- Create a friendly, informal, and reassuring atmosphere.
- Get the respondent to introduce herself/himself (name, position, years of experience)

2. Investigating the values that public servants value or appreciate the most in their areas of work? (10 mins)

- ***Objectives:** explore the current roles and responsibilities of interviewees, what decisions they usually make regarding the services/benefits of the citizens, and what values (as attitude) they strongly upheld in your work.*
- For the first part of the interview, I would like to know about your current role and responsibility in your organization. Could you please describe what you do, your role, and your responsibilities in your areas of work?
 - o **Probing question:** what types of decision-making relating to the benefits/services of citizens that you have to make in your daily work?
- What do you value most in your job, and how strongly do you feel about it? Can you give an example of a situation where this value influenced your decision-making?
- Have you ever been in a situation where your values were challenged? How did you respond?
- What further developments or improvements you would like to see in your work? Why so?
- "Here is a list of values often considered in public service. Can you pick the top 5 that are most important in your daily work? Why do you choose this, can you give an example of your work? Please feel free to add on any value that you believe important but not within the list.

3. Investigating the perception of public servants towards process automation (20 mins)

- ***Objectives:** explore the overall perception of process automation, what roles process automation take part in the decision-making process and investigate whether the application process automation align or challenge the upheld values of interviewees?*
- For the second part, I would like to understand your opinions of process automation technology as a concept.
 - o When I mention to you the term *process automation*, how do you understand and define it? Please note that you can give me your first thoughts and you don't have to describe it in technical terms
- Could you please describe a bit the process automation technology that you are using in your work? When did you start using it?

- **Probing question:**
 - How does the technology help with your tasks, especially when interacting with citizens or making decisions regarding their benefits/services? Please elaborate
 - Which part of the decision-making process is automated by using the technology and which part still requires your own judgement and decision? Please elaborate
- What is your opinion towards the use of process automation in your daily work? Why so?
 - **Probing question:**
 - What are the main benefits of process automation, and whose needs does it fulfill?
 - Is the current process automation technology the only solution for a specific customer need/problem, or are there alternatives?
 - **For public servants who used to work without automation:** What is the difference between your work before and after the use of process automation technology? Please list out and elaborate on any changes in your task and responsibility
- In my previous question, you have mentioned several things that are very important in your work. They are [*list out again what values participant said earlier*], now I hope you can help me to reflect on your experience and let me know how these things are impacted by the use of process automation. Do you think process automation supports or undermines what you value most in your work? Why and how?
 - "On a scale from 1 to 5, how much did automation strengthen or weaken these values?" Why do you think automation had this effect?"
 - Can you give an example where automation helped or conflicted with one of these values
 - How do you think this would affect Transparency, Security, Privacy and Autonomy? (only if they are chosen)
 - "Imagine you are designing a new public service process. You can optimize for either Efficiency or Justice/Welfare/Equality—which would you prioritize, and why?"
 - **Probing question for public servants who used to work without automation:** Are what you value or you think as important now in your work similar to what you thought as important before the use of process automation? If not, why so? Please elaborate
 - "Think about a process that was automated in your work. Before automation, which values were important? After automation, did any values become more or less important?"
- For the final part of the interview, I would like to focus deeper on the systems that interact with you or get involved in your area of work. Could you please let me know what do you think of them? Would you describe your attitude as positive, neutral, or skeptical? Why?
- **Changes in job, working process, and roles of robots in the work process:**
 - How have these systems impacted your role and responsibilities?
 - Have they made your work easier or more difficult? Why?
 - How have they changed the way work is done? Are such changes beneficial or disruptive? Why?
 - Reduction or creation of new tasks
 - Elaboration on communication/collaboration among colleagues and citizens
 - If you had to describe the role of these systems in your team, how would you describe it? (co-worker, tool, etc)
 - Are there tasks where you think automated systems should not be used? Why?
 - Do you think automated systems should take on more responsibilities in your work, or should their role remain limited? Why?
- **Interaction with automated systems**
 - How often do you interact with them?

- Do you feel comfortable relying on these systems for critical tasks? Why or why not?
- Have you ever had to override a system's decision? If so, why?
- Do you feel like you can trust the systems you work with? Why or why not?
- **Performance evaluation**
 - How do you evaluate the performance of automated systems in your work? What criteria?
 - What happens when the systems fail – who takes over and who is responsible?

Thank you very much for your time and contribution!

B List of Values by Masso et al. (2024)

Efficiency <i>Saving costs, time, and similar resources.</i>	Transparency <i>Openness and access to the data.</i>
Privacy <i>Protection of personal data.</i>	Security <i>Including cyber security, reducing people's insecurity, ensuring a sense of security</i>
Diversity <i>Consideration of ethnic, gender, and lifestyle groups.</i>	Welfare <i>Benefits to society.</i>
Justice <i>Socially justified activities and decisions in relation to the data.</i>	Sustainability <i>Environmental protection, reduction of waste.</i>
Equality <i>Equal treatment of all data subjects, being the target of data solutions.</i>	Monitoring <i>Effective control of human behaviour.</i>
Accountability <i>Responsibility for the use of data and possible consequences.</i>	Solidarity <i>People involvement, social cohesion.</i>
Explainability <i>Interpretability of results, comprehensibility for people</i>	Autonomy <i>People's power to decide independently.</i>
Interoperability <i>Adaptability, transferability, cross-border, universal usability.</i>	

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