

Success factors of Robotic Process Automation in case processing

Exploring the success factors of Robotic Process Automation in
case processing – A qualitative study

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Preface

This master's thesis is written as part of the master program BE-509 1. Submitting this master thesis involves the completion of our master's degree in international business at the University of Agder.

The inspiration for writing a thesis on Robotic Process Automation (RPA) started as an early idea in 2022. The future organization is prompted for new ways of structuring their divisions and managing employees as emerging technologies are introduced. Therefore, through personal at-hand experiences with RPA, we found it intriguing to investigate what effect implementation would have on contemporary organizations. The desired benefit was to attain more managerial knowledge about the technological environment of organizations.

The sincerest appreciation is directed to our supervisor, Professor Andreas Erich Wald. Thank you for providing us with guidance and constructive feedback. In addition, we would like to thank our first informant in this study for giving inspiration for the research question. Lastly, we would like to thank all our 10 informants in providing us with valuable insight into such an interesting field.

Abstract

Robotic Process Automation (RPA) is an alternative to automation and process management practices. Due to its applicability, RPA can function within current data systems and automate tasks by emulating human workers. RPA has emerged in the organizational environment as a measure to reduce costs and improve processes efficiently. Our motivation for this thesis developed through first-hand experiences with RPA. The literature identifies RPA to be suitable in high volume and repetitive processes, making case processing a top candidate for implementation.

Prior studies point out the need to identify and develop frameworks for success factors for RPA. This master thesis identifies and develops such a framework to answer the research question: *“What are the success factors for RPA in case processing?”*. We perform a grounded theory approach, conducting 10 semi-structured interviews with informants close to the phenomenon. We find 10 success factors and place them in three groups: Organization and strategy, Development structures, and Humans and stakeholders. Based on this, we critically discuss the various factors and compare these to prior literature. Lastly, we highlight the need for further research and the practical and theoretical implications.

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1.0 Introduction

Digitalization and automation are two of several terms explaining the rapid development of organizations over the past decades. Technological advancement has made it possible to drastically change the way organizations function with programs such as enterprise resource planning or customer relationship management (O’Leary, 2004). Organizations are continuously optimizing their processes to score better on key performance indicators (KPI) such as improved efficiency, effectiveness, customer satisfaction, and reduced cost. However, key challenges for contemporary businesses are the widespread use of legacy IT systems that require manual operations. These systems are not fully integrated into the business ecosystem and other IT systems, thus unable to achieve the true potential benefits (Willcocks, 2015). Additionally, organizations that are heavily invested in legacy IT systems often require substantial amounts of resources for alterations to infrastructure, policies, and contractual agreements (Willcocks, 2015; Willcocks et al., 2013).

One potential solution to such problems is to implement robotic process automation (RPA). This is a relatively new tool that can be added on top of current infrastructure and systems through the same graphical user interface (GUI) as humans. Hence, this type of software robot can be used to perform the same tasks performed by humans by pressing the same buttons and shortcuts as office workers would, only faster and more precisely (Plattfaut, 2019; Taulli, 2020, pp. 22–26). Examples of such tasks could be extracting information from one system to another, opening programs, or sending emails (Jovanović et al., 2018). RPA is best suited for tasks that are time-consuming, repetitive, and based on rules. It is less suited for processes where judgment is needed (Taulli, 2020, p. 87). Because of RPA’s ease of applicability, it has reached great demand from organizations seeking to revamp their current processes to optimize their performance. One study by Willcock et al., (2015) shows that organizations typically can achieve better service quality, faster delivery times, and lower costs while achieving greater scalability.

The motivation for a master thesis on RPA is driven by a desire to understand the potential influence RPA could have in improving the efficiency and accuracy of case processing in organizations. We have observed that such processes can present significant challenges in terms

of time consumption, cost, and human error. RPA, as an innovative technology, could have the potential to address these challenges while improving organizational performance. Our master thesis will delve into the success factors and limitations of RPA implementation in case processes and build on existing knowledge.

The body of knowledge could be viewed as rather new, with current literature being less than a decade old. RPA has portrayed itself as an accessible automation tool that can be integrated into existing processes (Taulli, 2020). In addition, as acknowledged there is a large number of legacy applications within modern organizations that lack integrations. Process workers are therefore forced to perform data transfer tasks from one system to another. Hence, as the literature suggests, RPA becomes an obvious choice to develop automation and integrations (Willcocks, 2015). Meanwhile, academic literature provides limited information on legacy systems and how this affects the organization and use of RPA. It does however frequently describe RPA and how it can function and imitate humans within existing ecosystems (Hofmann et al., 2020; Madakam et al., 2019; van der Aalst et al., 2018). Thus, we find the academic foundation for RPA and legacy systems as still highly relevant and will function as the topic of this master thesis.

Furthermore, the thesis wishes to address the simplified applicability and rapid integration that RPA literature suggests. This ease is often conveyed by researchers conducting studies on behalf of RPA service providers. The lucrative aspect is granted by promises of increased KPIs at a less expensive and faster rate of integration. Moreover, RPA could be an option to decrease, or dismiss conventional business process management (BPM) practices. Such is described by Willcocks (2015), distinguishing RPA and BPM, as well as referring to the simplicity of integration. While not completely dismantling BPM practices, the paper states that *“It is typically cheap and easy to use technology, it can often be deployed without IT specialists, and it tends to be mobile technology”* (Willcocks, 2015, p. 6). Additionally, similar cases have been conducted at an organizational level. The strongly cited O2 case study revealed through a comparison trial that RPA implementation was the obvious choice over BPM (Lacity et al., 2015). This paper was published in collaboration with Blue Prism, one of the main RPA providers. However, as RPA

literature has progressed, scholars have seen this “ease of implementation” as something which extends further than initially assumed.

While researchers have performed studies on RPA frequently since around 2014, there are still gaps and a lacking academic foundation surrounding factors that influence the success of RPA. According to Syed et al., (2020, p. 11) the current literature lacks a framework for success factors for RPA. Future research should be on an organizational context and identify factors and mechanisms of success factors. Plattfaut et al., (2022) created a framework of critical success factors for RPA based on a literature review and qualitative data. They found 32 critical success factors for the development and operations of RPA (Plattfaut et al., 2022). Additionally, another research gap is case processing. Literature suggests that RPA is applicable to various business cases and processes. Requirements are often high volume, standardization, rule-based, and repetitive (Hindel et al., 2020). We have not been able to find one study which directly studies the specter of case processing in RPA. However, based on previous academic literature, we see that the tool is being used for back-office, front-office, and typical integration across legacy systems to increase efficiency and reduce repetitive tasks performed by humans (van der Aalst et al., 2018; Willcocks et al., 2017). The application areas are related to case processing, which implies the importance of establishing a clear connection between them and RPA. Directly studying how organizations use this tool at the current moment is highly relevant and can provide researchers and organizations with new insights. In light of previous academic literature on success factors of RPA and case processing, we address the current research gap and focus this master thesis on the following research question:

“What are the success factors for RPA in case processing?”

This study is the first to discuss success factors for RPA in case processing and can highly influence the current research foundation that is available. In addition, this study offers unique details and insight into the Nordic market. To answer the research question, we perform a qualitative study with a grounded theory approach. We perform 10 interviews with informants from governmental organizations, private companies, and consultant businesses. The informants

consist of RPA developers, leaders, consultants, and a caseworker. Based on the findings we create a framework over success factors that are important for RPA in case processing. These findings can act as a springboard and foundation for future research.

After this introduction, we present a theoretical foundation for RPA and state-of-the-art research. In the third section, we provide the research methodology. Section four presents empirical findings and a discussion where the developed framework is provided. Section five presents the limitation, implications, and conclusion.

2.0 Literature

Given that RPA is a relatively new concept, the literature chapter will initially introduce the fundamental principles underlying RPA. Thereafter the thesis will present further baseline theories for BPM and case processing. By presenting these theories, the thesis will establish a foundation for discussing the success factors for implementation of RPA in case processing, while also reviewing their interrelationship and differences. Furthermore, the thesis seeks to showcase state-of-the-art literature, implying a more detailed or nuanced perspective on the success factors of RPA.

2.1 RPA

To comprehend the influence of RPA on case processing, it is crucial to examine its components. This will mainly highlight the basic principles and serve as a platform to demonstrate the potential benefits that RPA can bring to an organization's operations. Robotic process automation (RPA) is a topic being discussed in both academia and practice to automate business processes and improve efficiency. (Cooper et al., 2019; Plattfaut, 2019; Willcocks, 2015). While RPA easily can be misjudged as a mechanical machine, it is rather defined as software programs or licenses that can be used to automate repetitive and rule-based business processes that typically are routine tasks where the outcome is predictable in advance. Typically, organizations will deploy several robots, which each represent a software license (Aguirre & Rodriguez, 2017; Willcocks, 2015). According

to Willcocks et al. (2015), RPA is an excellent tool for reducing the need for humans in “swivel chair” processes. This is considered manually entering inputs into several systems, such as from an email, then copying, pasting, and merging information to ERP, CRM systems, spreadsheets, or other legacy systems.

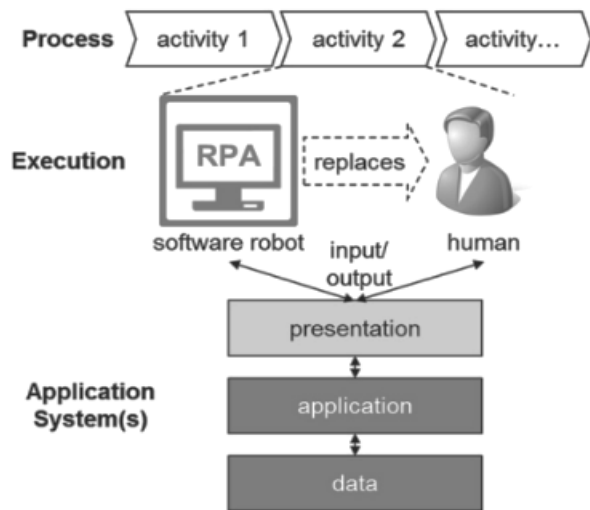
According to Lacity & Willcocks (2015), RPA differentiates itself from other types of automation and BPM tools by two main points. Firstly, RPA does not require any programming experience, which makes this tool easier to implement than other types of automation software. The interface of RPA software is designed as a low code environment where the users can click and drag from the interface and existing programs to automate a process. In other words, this makes it possible for business professionals outside of IT, with in-depth knowledge about internal processes to automate processes within a few weeks of training. Secondly, RPA can be considered as “lightweight” IT as it can work on top of existing computer systems. It is not necessary to change the existing infrastructure, RPA tools can simply be integrated into the entire technology stack and would use the computer systems in the same way a human worker would, by logging into the systems and pressing the same buttons to execute the same task. Further, they argue that RPA is not replacing enterprise IT systems, however, it is well suited for automating existing processes by using the same interface of existing applications (Willcocks, 2015).

Additionally, RPA is being used by organizations in a variety of sectors, such as banking, accounting, and healthcare to automate processes such as invoice processing, customer support, and tax services (Aguirre & Rodriguez, 2017; Plattfaut, 2019.; van der Aalst et al., 2018). Several studies show strong benefits in terms of increased efficiency, effectiveness, accuracy, and compliance (Cooper et al., 2019; van der Aalst et al., 2018; Willcocks, 2015) The study by Cooper et al., (2019) which research RPA in accounting found several examples of successful use cases, such as a task that took 16 hours of manual labor took the bot 17 seconds to finish. In addition, some companies had increased cost reduction from RPA, so previously outsourced tasks are now being done in-house with the help of RPA. Fersht & Slaby (2012) argues that enterprises may use RPA to break through automation bottlenecks in the organization while at the same time reducing the dependence on outsourcing costly processes. Further, they estimate that a position costing USD

80K in the organization, could be outsourced for 30k, while a robot could be developed for 15k, which could run 24/7 and require less management and training than personnel. This opens up a new wave of flexibility, in-house control of processes, and cost savings for organizations without extensive investments (Fersht & Slaby, 2012). Furthermore, Cooper et al., (2019) found that organizations are not expecting to reduce the number of employees because of RPA or replace the human workforce, instead, the tool enables them to migrate personnel to other types of tasks that require judgment or other cognitive skills that will be value adding and increase the quality of service for clients.

The general architecture and function of RPA is explained by figure 1. The software robot is using the same application and presentation that a human worker does. The software robot may be used for limited activities or all activities in a process. The organization can configure the robot to replace human labor in activities that are suitable for automation. Typically, these are rules-based and repetitive activities that do not require individual judgment. (Urbach, 2018; van der Aalst et al., 2018)

Figure 1 RPA architecture and functions

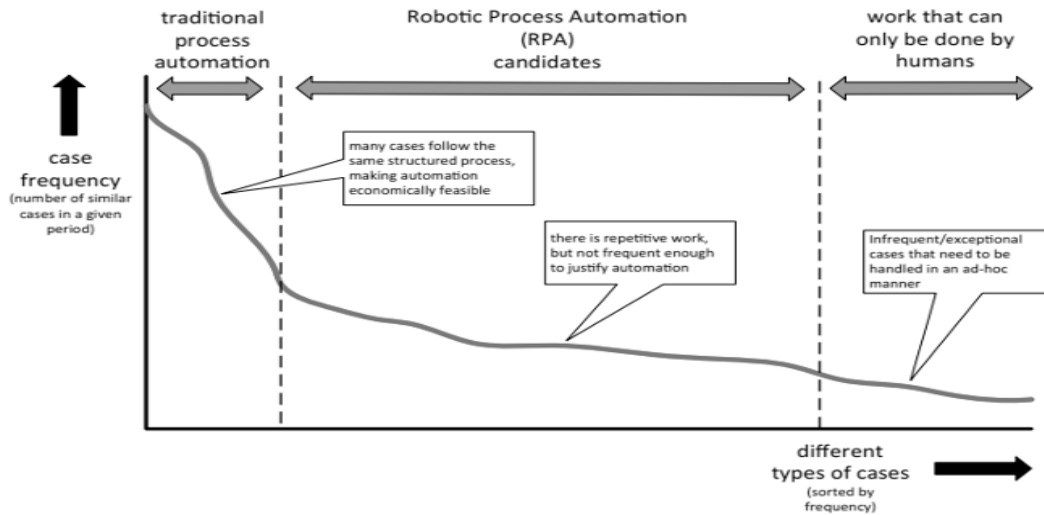


From: Schmitz, M., Dietze, C., & Czarnecki, C. (2019). Enabling Digital Transformation Through Robotic Process Automation at Deutsche Telekom. In N. Urbach & M. Röglinger (Eds.), *Digitalization Cases: How Organizations Rethink Their Business for the Digital Age* (pp. 15–33). Springer International Publishing. https://doi.org/10.1007/978-3-319-95273-4_2

Finding the right processes, the Pareto principle:

The Pareto principle is a crucial theory to consider in the context of case processing because the characteristics of case processing often align with those mentioned as significant by the Pareto principle. To elaborate, the Pareto principle is being used in the literature to further contextualize RPA. Typically, organizations see the Pareto principle where 80% of the cases only use 20% of the different case types, which means that the rest is infrequently used. The typical automation practices for organizations are to automate the most frequent case types, however as automation brings huge costs, the less frequent case types are not considered to be automated. This is especially the case for internal and legacy systems which further makes automation costly (van der Aalst et al., 2018). In turn, the remaining cases which represent the majority of case types must be handled manually by workers across the various IT systems. The remaining cases require substantially more time per case. According to Van der Aalst (2018), the remaining cases that don't follow the traditional process automation cycle, makes them great candidates for RPA, as the bots can interact with the IT systems in the same way as humans would, hence reducing the time required for the agents to do manual labor while avoiding further large investments. Meanwhile, because of complexity or cost, some tasks would not be suitable for RPA, fig 2 represents this Pareto graph divided into three parts, where the middle represents candidates for RPA (van der Aalst et al., 2018, p. 270).

Figure 2 Pareto principle



Positioning RPA

From

“Robotic Process Automation” by van der Aalst, W. M. P., Bichler, M., & Heinzl, A. 2018.. Business & Information Systems Engineering, 60 (4), 269–272, Figure 1, p 270. <https://doi.org/10.1007/s12599-018-0542-4>

Triple Win model:

Lacity & Willcocks, (2017) argues that organizations may be able to achieve a “triple-win” when implementing RPA, see figure 3. Their research covers several organizations which experienced benefits for shareholders, customers, and employees. Further, they argue that the largest risk of not achieving the triple win is to use the tool as a tactical tool to reduce cost in a specific process or a department. Further, having low budgets for RPA will lead to little value added (Lacity & Willcocks, 2017, p. 37).

Shareholder value:

In the study of Lacity & Willcocks (2017), those organizations with best practices experienced a more flexible environment and competitive advantages compared to rivals at the time. One finding is that organizations have a high *ROI* in the first year after implementing RPA, ranging from several hundred percent returns to 30 percent. A retailer from that case study had implemented RPA in 97 processes resulting in 280 000 saved hours, which equals 140 full-time equivalents (FTE). In addition to increased hours back to the organization, it had other operational efficiencies

such as being able to perform higher workloads while at the same time requiring fewer new hires (Lacity & Willcocks, 2017).

Employee value:

The use of RPA can drastically deliver value for employees according to Lacity & Willcocks (2017). Employees affected by RPA can often experience reduced tasks requiring copying information across multiple data systems or “swivel chair” tasks where the employee does not add any value to the data. This allows using human labor differently, by doing more interesting tasks that require judgment, creativity, and problem-solving skills. In addition, the literature suggests higher employee satisfaction and the possibility to learn new skills as potential benefits (Hindel et al., 2020; Lacity & Willcocks, 2017).

Customer value:

The customer component of the Triple Win Model focuses on how firms may employ RPA to provide real benefits to end customers. RPA enables enterprises to deliver results that are faster, higher in quality, and less expensive than traditional manual procedures. Customers benefit from enhanced satisfaction and improved experiences as a result of expanded choice, timeliness, and personalization, as well as more personalized, effective, and cost-efficient services (Lacity & Willcocks, 2017). For example, the customer will receive greater response time through the work being done at a faster rate. Furthermore, if the case is of a complex manner, the caseworker will have more time to focus on the complexity of the case rather than having to manage repetitive or low-complex tasks.

Figure 3 Triple win



From: “Robotic Process Automation: Strategic Transformation Lever for Global Business Services?” by Willcocks, L., Lacity, M., & Craig, A. 2017. *Journal of Information Technology Teaching Cases*, 7(1), 17–28., p. 28 <https://doi.org/10.1057/s41266-016-0016-9>

2.2 Business process management

RPA is, as mentioned, conveyed through literature as a tool that can complement or surpass conventional BPM practices (Willcocks, 2015). By presenting the basic principles of BPM and comparing them to those of RPA, we can highlight key differences. Also, this allows for further discussion revolving around how BPM still has a presence when RPA is implemented.

Organizations are continuously striving to improve their processes and boost performance. To achieve this, each organization to some degree applies systematic management of a series of interrelated activities that transform inputs into desired outputs (Zairi, 1997). This theory is mainly known as process management or business process management (BPM). Although BPM is often defined quite widely in the academic field, an early review conducted by Lee & Dale (1998) found four recurrences in literature:

1. The structure;
2. The analytical aspect;

3. The cross-function; and
4. How the process constantly seeks improvement.

Further elaborating, a customer-focused approach to the systematic management, monitoring, and improvement of all business processes through cross-functional cooperation and employee empowerment may be described as BPM. In other words, this can be understood as the organization's responsibility to validate that the core operational processes are identified, documented, measured, and improved (Prior-Smith & Perrin, 1996). Moreover, Hammer (2015, p. 7) states that “*Through process management, an enterprise can create high-performance processes, which operate with much lower costs, faster speeds, greater accuracy, reduced assets, and enhanced flexibility*”. However, for a process to operate on a sustained basis, it is essential to have certain critical enablers in place. According to Hammer, (2015), there are five key enablers for a high-performance process: process design, process metrics, process performers, process infrastructure, and process owner.

The first enabler, *process design*, refers to the specific tasks, roles, and goals that are to be performed within the process. This is considered the most fundamental aspect of the management process and is essential for creating a cohesive and organized approach to work (Hammer, 2015). The second enabler, *process metrics*, plays an important role in aligning the process with customer needs and organizational goals. Many enterprises apply functional performance metrics, which could potentially lead to suboptimization, misalignment, and misunderstandings (Hammer, 2015). To address this, end-to-end metrics should be used, and targets should be set based on these metrics with performance monitoring in place. Additionally, to make sure that advances in one area do not mask possible decreases in another, the business should have a balanced set of process measurements (such as speed, quality, and cost). The third enabler, *process performers*, refers to the individuals who work within the process. They require specialization in their field of work in comparison to those who are situated in standardized functions and departments. They must recognize the overall process and its aims, as well as be able to collaborate with others and manage individually. They will not be able to achieve the full potential of end-to-end work unless they possess these attributes (Hammer, 2015).

The HR and IT systems that support the process performers make up the fourth enabler, also referred to as *process infrastructure*. This becomes important because functionally disjointed information systems cannot support integrated processes, and traditional HR systems only serve to promote disjointed work views. Therefore, integrated systems (such as ERP systems and systems for performance-based remuneration) are required for integrated processes (Hammer, 2015). The final enabler, the *process owner*, refers to the senior manager who has the main authority for a process across the organization. In a traditional organization, no employee is in charge of an end-to-end process, making it impossible for anybody to properly oversee it. However, proper process-invested firms have a process owner overseeing the cycle and managing thereafter, thereby assuring the process's long-term viability (Hammer, 2015).

This complexity creates a demand for high-standard business processes, leading to organizations adopting the digitalization aspect of process management. Here BPM has transformed as a definition, with van der Aalst (2013, p. 1) stating that BPM “*combines knowledge from information technology and knowledge from management sciences and applies this to operational business processes*”. The interesting part about BPM is the association with trying to mitigate the use of technological aspects while enhancing the organization's processes, here through management suggestions on cost-saving activities while raising standards (van der Aalst, 2013). BPM, on the other hand, is also linked to software that controls, manages, and supports operational processes. Such implementations of software tools were often found in traditional workflow management systems (WFM). However, this sort of automation was viewed as having mechanical and less flexible characteristics. As a solution to the demand for well-functional BPM with a need for infrastructural IT support, organizations have adopted technological systems at an early stage to aid their existing processes. This has resulted in organizations having designed their process to match the set metrics. Furthermore, requiring performers to handle the tasks to reach the set objective. The process environment is therefore left as dependent on an already existing system handled in a said manner.

When organizations become heavily invested in a comprehensive business process supported by a specific software or legacy system, it can require substantial amounts of resources to manage or change. This is where RPA can become a suitable option for organizations facing a need for alteration or flexibility. Several studies have been conducted on traditional IT and BPM development, comparing it to RPA. Resulting of these studies are common characteristics differentiating BPM from RPA (Flehsig et al., 2019; Hammer, 2015; Willcocks et al., 2017). Table 1 is an interpretation of the literature, comparing BPM to RPA.

Table 1 Comparison of BPM and RPA

<i>Requirements:</i>	BPM	RPA
<i>Applicability</i>	<i>Extensive:</i> demands for detailed planning and execution by management and software specialists through a broad time span.	<i>Modest:</i> easily applicable and managed by employees through existing processes and software.
<i>Integration process</i>	<i>“Top-down”:</i> re-design demands for complex integration and alteration of existing processes and software. Longer test period and monitoring.	<i>“Bottom-up”:</i> existing software’s GUI is implemented RPA, keeping their logic as is. Shorter test period of the systems while distributing training accordingly
<i>Integration personnel</i>	<i>Specialization:</i> through analytical (BPM), and software specialists (coding).	<i>General:</i> through qualified management, personnel, and specialists.

<i>Development</i>	<i>Expensive:</i> resource dependent. Larger associated costs and longer amortization period.	<i>Limited:</i> less associated costs and shorter amortization.
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2.3 Case processing

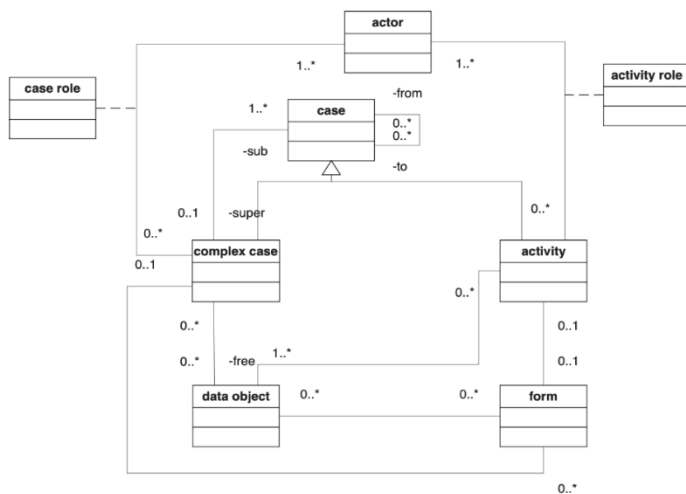
Since this thesis is centered around case processing, it is essential to highlight the main theories relevant to this process. This is particularly important because it sheds light on the tasks, systems, and stakeholders involved in case processing, providing a comprehensive understanding of the environment that can impact the success of RPA implementation. In recent years, case processing has faced an increasing demand for supporting flexible and knowledge-intensive business processes. Case processing has – while the definition is somewhat unclear and relies on the context of the organization, some recurring characteristics (van der Aalst et al., 2005):

Case, the case can be defined as the "product" that is made, and the organization should assure that employees are aware of this given context. Such instances could be reviewing a job application, the conclusions of a law violation, the result of a tax assessment, and the decision about an insurance claim (van der Aalst et al., 2005). To properly handle these cases there has to be an *Activity*, which is necessary and logical tasks completed by e.g., employees internally or customers externally. In case processing these tasks are often separated by the ease of transmission from one to another (van der Aalst et al., 2005). *Process*, which is the design of how the given case should be managed. This might vary based on the organizational objective, as well as how much insight or autonomy an employee has on the overall process (van der Aalst et al., 2005).

Data object, give the organization relevant information about the case to be handled. These objects could either be present or not present based on the retrieval aspect of the process. When the case has a presence of data objects it bears value, and this value is often crucial for knowledge-intensive processes. The data could either be mandatory or free, meaning that if a case needs mandatory

data, this has to be retrieved before the process can continue. On the other hand, free data could be managed at any time in the process (van der Aalst et al., 2005). When the data is retrieved, *Forms* are used to display several perspectives of the data objects connected to a particular case. Forms can be connected to activities to display the most applicable data elements. The only purpose of forms is to display collected data. It is explicitly stated how data objects, activities, and processes are connected (van der Aalst et al., 2005). A process is connected to each data object. Lastly, case processing uses different *Actors* such as managers or employees to perform the required activities within the process. The process could consist of multiple actors and each actor contains a certain level of approved influence on the case. The roles are often organized, where one role either executes, redoes, or skips an activity linked to the case (van der Aalst et al., 2005). Furthermore, van der Aalst et al., (2005) developed the case handling meta model. This model is practical to highlight how RPA can potentially influence case processes, showcasing steps in case processing where automation can occur.

Figure 4 Case handling meta model



From: “Case handling: A new paradigm for business process support” by van der Aalst, W. M. P., Weske, M., & Grünbauer, D. 2005. *Data & Knowledge Engineering*, 53(2), 129–162., Figure 1. p. 12 <https://doi.org/10.1016/j.datak.2004.07.003>

Figure 4’s primary component is the case, which represents both complex and atomic cases. This case may include sub-cases and activities, that begin when an incoming case is received. Each instance of an activity definition is linked to a set of mandatory or restricted data item definitions

with forms set in place to display the information. Every definition of an activity includes assigned roles that specify the authorization levels for both the users and managers who initiate and advance a case through its hierarchical structure. The methodology offers an organized approach, making sure the right data is input on time (van der Aalst et al., 2005). After reviewing the case handling meta model, this thesis may illustrate the advantageous impact of RPA on process streamlining, leading to improved process efficiency. Here through alternating the overall process design, changing internal roles and tasks. First through allowing fewer complex cases to be handled by automation, but also through freeing up time used on mandatory objects in complex case types.

2.4 Legacy systems

Gartner describes a legacy system as outdated technologies that are still being used and critical for the operations of an organization (Gartner Glossary, n.d.). Bisbal et al., (1999). Defines a legacy system as “any information system that significantly resists modification and evolution”. These systems are often built over decades and run on hardware that is outdated, expensive, and slow, which in turn makes them difficult to extend with new features as such systems rarely can be integrated with other systems.

2.5 State of the art - Success factors RPA

The academic literature points to several important success factors and advice for organizations to be successful when implementing. However, it is unclear as to why academic literature has not yet created frameworks for what the most important factors are for organizations. Syed et al., (2020) described the missing frameworks of success factors as an important step for future research. Plattfaut et al., (2022) have since performed a critical literature review to develop a framework of success factors. We will now present the current state of success factors for RPA.

A first success factor is also presented in literature about IT projects. The development of RPA projects requires a standardized and structured approach to create efficient projects and perpetuate knowledge (Khan & Keung, 2016). Further, organizations must create projects that are scalable and maintainable over time (Lacity et al., 2015). Maintainability is of high importance, as the cost

of maintenance to non-suitable processes is high and can outweigh the potential savings (Geyer-Klingenberg et al., 2018; Hindel et al., 2020; Lacity et al., 2015).

A second group of success factors relates to active stakeholders and top management to support the implementation of RPA. The support of top management is important to make sure the necessary resources and prioritizations are provided to the project for continued operations. This view is presented in both RPA literature and broader IT literature (Fernandez & Aman, 2018; Osmundsen et al., 2019). A changing factor for RPA projects is the possibility to reduce the necessary IT staff and programmers with knowledge workers and business professionals. In addition, Osmundsen et al., (2020) argue that organizations must have the necessary knowledge and stakeholders to monitor the automated processes.

Finney & Corbett (2007), recognized how RPA implementation could fail if there is a lack of combination of IT and business skills. They addressed this barrier by establishing multiple options. The first option being the utilization of external consultants for knowledge transfer. While another alternative involves employees being a part of the development process, thereby promoting the sustainable expansion of competence. It is suggested that organizations should mitigate potential complications arising from the IT department being unfamiliar with process flows, or that employees have inadequate technical knowledge in RPA development and maintenance.

Moreover, scholars have acknowledged the importance of sufficient organizational structures. Here referring to the governing policies and concerns regarding security. The organization could increase the likelihood of RPA success by focusing on compliance with general IT and organizational policies. Therefore, there is a need to adapt existing security and compliance policies (Raza et al., 2019). In addition, literature suggests establishing a Center of Excellence (CoE) to support the sharing of knowledge (Kokina & Blanchette, 2019; Osmundsen et al., 2019), while also ensuring collaboration between different organizational departments. CoEs can open up for larger amounts of skilled personnel, showcase best practices, and develop optimized frameworks. These practices are particularly useful for larger and more complex RPA implementations.

The strategic approach for RPA is another success factor mentioned. Organizations must approach RPA with the current organizational strategy in mind in order to develop RPA processes that yield the most value (Aguirre & Rodriguez, 2017; Plattfaut et al., 2022). Failing to do so will substantially reduce the benefits of automation. In addition, the literature suggests that using the tool as an initiative to reduce the necessary number of employees is likely to experience difficulties in culture and foster a negative view of robots by human workers (Fernandez & Aman, 2018). Summarizing the findings, table 2 is based on the success factors mentioned in this chapter with the respective literature highlighted. This representation functions as a baseline, where the thesis can contribute to existing literature.

Table 2 Success factors in the literature

Success factor	Literature
Standardization and structured approach	(Khan & Keung, 2016; Hindel et al., 2020)
Stakeholder involvement	(Fernandez & Aman, 2018; Osmundsen et al., 2019)
Combination of IT and business	(Finney & Corbett, 2007)
Organizational structures	(Kokina & Blanchette, 2019; Osmundsen et al., 2019)
Strategic approach	(Aguirre & Rodriguez, 2017; Fernandez & Aman, 2018)

3.0 Methodology

This chapter will present the methodological approach used in this thesis. Here, we will present the research design, data collection, and analysis. Further, we will explain as to why a qualitative research method combined with grounded theory was appropriate to study this phenomenon. Lastly, we will elaborate on the credibility, reliability, generalizability, and ethical assessments in this study.

3.1 Research design

In order to investigate the success factors and barriers for Robotic Process Automation (RPA) in case processing, it is necessary to establish a research design that uses reliable and valid methods for answering the research question (Saunders et al., 2019). The literature about RPA started

gaining traction from approximately 2016, however RPA in the context of caseworkers is a relatively unexplored field. A qualitative method has been selected, as this phenomenon is rather subjective and we as researchers want to build on the current theoretical perspective already existing in the literature and form coherent lines and relationships between the various meanings from the interview informants. Using semi-structured interviews, this qualitative type of method is best suited to get a better understanding of this relatively new phenomenon. In contrast, a quantitative research method is often used in a deductive approach, where data is collected numerically and used to test a theory and relationships between variables. Typically, the datasets consist of a large amount of data and participants (Saunders et al., 2019, p. 176). As this master thesis examines research questions that have not been studied in depth previously and would not come to any statistically significant conclusions, a qualitative research design is most suitable.

3.2 Grounded theory

Grounded theory first emerged through literature by Glaser and Strauss (1967) and has since evolved as an approach used in various academic fields. As per definition, grounded theory is referred to as a meta-theory of inductive research design that stresses the comprehensive utilization of data to generate theories (Murphy et al., 2017). Two primary factors for utilizing grounded theory in our research are driven by both RPA's maturity, and that our research question is primarily catered towards case processes. This combination consists of limited prior literature in an academic setting, thus making our initial research a rather underexplored domain.

Furthermore, grounded theory focuses on principles such as emergence, theoretical sampling, theoretical saturation, and constant comparison (Charmaz, 2014; Murphy et al., 2017; Walsh et al., 2015). Our research method of data collection originated from semi-structured interviews, where we constantly stayed open to new events and facts that arise throughout data collection and analysis. In grounded theory, this is referred to as emergence (Corbin & Strauss, 1990). Moreover, constant comparison entails iterating between new data, existing data, and existing literature in order to build a theory of social reality that is founded on past and present facts and informed by existing literature (Corbin & Strauss, 1990). Such were found throughout our research, with the

research continuously increasing in knowledge as the interviews were conducted and data collected, comparing or contrasting it with existing literature. Theoretical sampling entails selecting data sources that will help to illuminate the emerging theory (Charmaz, 2014). The main intention of our sampling was to get an overview of the RPA segment, and therefore select appropriate and knowledgeable informants that can contribute significantly. Through sampling, we discovered that we required different points of view from not only developers but also consultants in the field, as well as at-hand employees using the product in their daily work. This was also found through achieving a form of theoretical saturation (Charmaz, 2014; Murphy et al., 2017).

To summarize, grounded theory is a great method to further understand some of the black box topics surrounding the use of RPA in case processing. RPA has extensive research, however, the realm of case processing is still an unexplored area that has little explicit research. The data gathered from the interviews are being used to form an understanding of how organizations view RPA in case processing, hence the “black box” (Murphy et al., 2017). We form a theoretical model for key success factors through collected material based on 10 informants who are close to the phenomenon.

3.3 Sampling

The basis for our sample size was not initially predetermined but rather formed concurrently with the theory-building process (Murphy et al., 2017). As a starting point, we primarily focused on a specific sample based on the scope and nature of the study, as well as the specialization required to retrieve sufficient quality data. The scope of the study outlined a clear focus in selecting the initial participants, through the researchers' objective of informing emerging theory (Saunders et al., 2019). Common grounded theory has a rather wide general thought about the required sample size, ranging anywhere from 10 to 70, where the upper echelon often relates to greater quality of data (Murphy et al., 2017). However, the scope and nature presented itself as rather narrow, applying theoretical needed sampling of organizations partaking in case processing processes, while also implementing RPA into existing legacy systems. As a result, the sampling was found

to be bound to a particular population to retrieve theoretical relevance about the topic. In addition, one must factor in the compressed time constraint affecting our ability to conduct and code a higher number of interviews with appropriate individuals. Moreover, we also sustained a general rule to supply information from additional interviews until we reached theoretical saturation. Such occurred first through segments of informants, resulting in switching of segments, before reaching overall saturation. Satisfactory results were met at a total number of 10 interviews, equivalent to Murphy et al., (2017), suggesting between 10 to 15 semi-structured interviews with subjects close to the phenomenon. At this level, our subjective assessment suggested that any additional interview would supply minor value.

To outline our sampling process, we first reached out to the main contributors of in-house RPA development in various organizations. These organizations were not restrained to be in either private or public, which widened our specter of reach, while also allowing an opportunity of seeing differences among sectors. Additionally, we had no criteria for organizational size. However, because RPA is more prevalent in larger organizations, most of the organizations were medium-sized to large. As we further progressed in the first interviews, we reached a somewhat theoretical saturation across RPA developers regardless of sector. It became apparent through the initial interviews that RPA consultant firms have a crucial perspective, which also created more nuance from an external point of view. Furthermore, we found it relevant to bring in the employees or middle managers within case processing, to get a greater understanding of their impressions of RPA across the organizational line. Although the latter might have limited amounts of insight into technological or process orientations, they contributed with an important human outlook on the phenomenon, through using the tool in case processing on a daily basis.

Our sampling reflects a summary of the domestic RPA market. The participating actors had a wide range of experiences professionally, providing us with valuable information. Table 3 is a summary of the different respondents.

Table 3 Informants

Informant #	Organization type	Role
1 / A	Large gov organization	Lead automation
2 / B	Bank	RPA developer
3 / C	Large gov organization	Leader
4 / D	University	RPA developer
5 / E	RPA Consultation	Leader
6 / F	Large gov organization	Case worker
7 / G	RPA Consultation	Leader
8 / H	Large gov organization	Leader RPA
9 / I	Large gov organization	RPA developer
10 / j	Healthcare	RPA developer

3.4 Data collection

Informant interviews provide for the majority of data gathering in grounded theory research, with the interview transcriptions frequently acting as the primary source of data (Murphy et al., 2017). Our study found the use of semi-structured interviews to be the most suitable to retrieve the primary data. Here by combining the knowledge retrieved through literature, and creating a structured interview guide, while also having the option to freely discuss the research topic as the interview evolves. Additionally, we recognized that our interviews developed in character as we gained greater insight into the subject, while also noticing the importance of using secondary data as a complementary source of information to the primary data collected through interviews. Prior to the interviews respondents were allowed to view the proposed research questions that would be discussed, granting them the opportunity to settle into the material beforehand.

The interview questions were divided into three parts, and the first two were specifically designed to focus on RPA and business process management. Lastly, we ended the interview with more open-ended and complex inquiries, dwelling on subjects around RPA process maintenance and future development. Furthermore, each of the interview questions also promoted follow-up discussions, allowing respondents to provide more thorough and nuanced comments. Conversations were recorded using audio recording devices. This approach was chosen because it made a verbatim transcription of the interviews possible, which allowed for greater detailed analysis post-interview. Also worth noticing is that we did not acknowledge nonverbal clues, as we did not find this to be particularly useful for understanding the topic. Therefore, the choice to concentrate just on the discussion's content was made based on the assumption that doing so would yield the study's most insightful and useful findings. Additionally, by avoiding nonverbal clues, we were able to keep our attention on the interview procedure, leading to a more focused and efficient technique of data collecting.

3.5 Reliability & validity

Reliability in qualitative research can be viewed as whether researchers would be able to replicate the same research design and achieve somewhat the same findings (Saunders et al., 2019). Despite substantial differences between qualitative and quantitative research, Patton (2015) argues that reliability is a key aspect to successfully getting as close to the setting studied even in a complex and methodologically imperfect world (Patton, 2015). Following Lincoln & Guba, the credibility of the study is of high importance, and by engaging multiple informants and organizations using RPA internal validity is kept high by placing the findings together to find a shared relationship (Lincoln & Guba, 1985). Thus, environmental triangulation was used on multiple organizations to study the same phenomenon of RPA in case processing in different environments. Triangulation increases the reliability of the study and provides the researchers with a deeper and better understanding of the phenomenon (Stahl & King, 2020).

The interviews were performed in the native language of the informants to reduce the chances of a language barrier, making the flow of the conversation natural, and keeping the level of trust

between the researchers and informants as high as possible (Squires, 2009). Each interview was first transcribed word for word and coded in the original language as this reduces the possibility of translation errors altering the information. Following Crystal, (1995) and Torop (2002) we tried to “keep the meaning and expression” from the original source and translate the quotes to English. First, the relevant quotes were translated word-for-word, then a second time to confirm if the meaning was preserved and to increase rigor.

Further, the concept of validity in qualitative research is of high importance. Qualitative research may not provide statistically significant results, however, this does not make the research less valuable, as the context of this study is to explore and provide insight into a complex phenomenon. Saunders et al., (2019, p. 448) describe validity as the extent researchers get access to knowledge and experiences, using this information to infer meaning from it. Further, it refers to an appropriate choice of measurements, an accurate analysis of the interviews, and the generalizability of the content.

Sekaran & Bougie, (2016) refers to validity in two parts. First internal validity, which represents an accurate representation of the data collected. The second part is external validity, which represents how the phenomenon can be generalized into other contexts. In the findings chapter we tried to provide the large common themes the informants had experienced and not include smaller events that were mentioned less frequently. Due to the different levels of maturity and experience in the various organizations, extra attention was given to the organizations with more experience. In addition, to ensure high external validity we include accurate data that includes quotes that support or contradict the theory if possible.

Best practices grounded theory:

Credibility refers to the fact that the findings are true and which in turn represents the reality of the phenomenon (Lincoln & Guba, 1985; Murphy et al., 2017). During the interviews, we member-checked findings in order to evaluate whether the participants had similar thoughts about the same questions. This was true more often than not, and the informants provided deep insights and knowledge when asked about specific meanings from each other.

Transferability: is similar to external validity. As grounded theory does not offer a simple way for generalizability for organizations, it rather focuses on building a well-written study that can make the findings useful in other contexts and settings. This study uses extensive empirical findings about the topic of RPA in case processing with opinions from developers, leaders, and caseworkers across organizations in Norway. While the empirical findings are of high quality and offer extensive insight, information about the informants and organizations is anonymized, lowering the level of transferability.

3.6 Ethics and data

According to Saunders et al., (2019), ethical problems might occur while conducting research because of conflicting social norms and philosophies. In response, some academic institutions and professional organizations have created codes of ethics that specify the values and norms to guide research. These guidelines are intended to protect against misconduct, as well as to guarantee that our research is carried out in an ethical and responsible manner. Therefore, it is crucial that we as researchers adhere to the ethical code or standards established.

Following the invitation to participate in the interviews, each respondent was given sufficient information about our purpose for writing the thesis, as well as the roles and responsibilities of the researchers. In addition, each suggested interviewee was given a reason for why they were chosen as a desired respondent. Researchers stressed the importance that this was completely voluntary where they could withdraw participation at any given time, while also further informing about what participation required. Provided was also formal information about the rights of a respondent, as well as how the interview would be managed, here assuring that each participant is comfortable in the interview process. The University of Agder and the Norwegian Centre for Research Data (NSD) guidelines were followed for the storage of the research project's data and voice recording (Bariås, 2023; Sikt, n.d.). An application was made to NSD to assure secure storage of the data retrieved from the conducted interviews.

This was also emphasized during our interviews, highlighting the importance of recording and anonymizing the interview. Our participants were made aware that all information gathered would be kept in a secure database and that it would be completely anonymized in compliance with NSD standards. We also let participants know that the data will be removed from the database in June 2023, making sure that our study was carried out ethically, responsibly, and in accordance with NSD guidelines. The template provided for the consent agreement is to be found in appendix 1.

4.0 Findings and discussion

This chapter will present the main findings from our research. Because there was a large amount of data received from the conducted interviews, the thesis will present the discussion points post subchapters, to ensure that the thesis becomes clearer and more comprehensible for the reader. The subchapters are structured in four, with the first being the basis for organizations' RPA implementation. The following are the three primary focus areas for success factors for RPA implementation in case processing. These areas were selected through a combination of prior literature on RPA success, an evaluation of our interview guide, and a post-coding assessment (Plattfaut et al., 2022; Syed et al., 2020). The selected subchapters are organization and strategy, development structures, and humans and stakeholders. A summary of the main findings will be presented in table 4 at the end of the overall chapter. This is to further gain clarity on each success factor, while also allowing researchers to synthesize the presented data. The purpose of this is to emphasize the factors that were most mentioned or reiterated among the respondents.

4.1 Basis for RPA implementation

First, by stating the primary reasonings for organizations' RPA involvement, we can evaluate the various factors contributing to change, and thereby establish an overview of why different organizations suggest RPA implementation. This will be presented with a baseline in outdated legacy systems and case processing, with a sub-focus on key affecting variables contributing to the overall choice of implementation.

In the study, almost all participants had an environment where legacy systems were frequently used. A recurring theme was participants that considered at least parts of the case processing toolbox as ancient, slow, and based on a workflow that is no longer adequate. As an example, multiple participants explained that the case handling system was originally designed for caseworkers manually working with physical papers alongside the program which is still somewhat affecting the current workflow several decades later. In this example, the RPA process uses object-character recognition to read documents and transfer information from physical documents into the case processing program.

In addition, our empirical data reveals a challenge for organizations where legacy systems do not seamlessly work together, which requires manual transfers of data from one system to another, which increases the risk of human errors and inconsistencies. In addition, such manual handling of data across systems and inefficient processes leads to bottlenecks in the organizations due to time-consuming tasks where the caseworkers spent time doing repetitive tasks not actually contributing to neither the data nor a decision in the case. Further, such integrations could be achieved faster and less costly with the use of RPA than the typical way of software development in order to improve such tools, which requires extensive investments in terms of planning and execution. For some legacy programs, several developers explain that it is even unwanted to use resources on improving or adding features.

"We can very quickly create, not even a prototype, a well-functioning robust solution, which gives us possibilities to create better underlying systems. So we can use the robot to make up for missing functionalities, and set up integrations that wouldn't be possible either. Because the robot can machine read on the one hand, and emulate a human on the other. Regardless of to or from. (...) So if you set up a working integration, we can use data from system A to system B. And if the people can sit on system A, then they don't have to worry about us replacing the system B in the long run, or that the technology we use to set up integration is replaced" - **A, Lead automation, large governmental organization**

The quote above demonstrates the need such organizations have for programs working together seamlessly, however in practice such features may be lacking. RPA can be used to develop integration across systems by emulating human workers to transfer such data. In the long run, RPA could also make the organization more flexible in terms of replacing and hiding internal mechanisms. Informant J estimates that they use around 1500-2000 different applications ranging from internal to external tools from various providers, which made it difficult to manage for both caseworkers and IT. In several interviews, we were told that RPA is considered one of the only viable options for the cost- and time-effective development of missing functionalities and integrations:

“Absolutely. It is because the business requires functionality that these legacy software cannot deliver, and it is very time-consuming and expensive to develop the new functionality in the legacy software. And then RPA is there which can do the job and can deliver the new functionalities in a very simple, fast way.” - **G, leader, RPA consultation**

On the other hand, some of the organizations explained that RPA was used alongside traditional development, however as this process was time-consuming, RPA was used as a transitioning tool for new automation features until new and updated systems are in place.

"We were faced with the challenge of introducing large and complex systems that required significant time and effort to implement, including intricate integration processes that could take up to two years to complete. Recognizing the need for a swift and efficient solution, our university decided to leverage RPA as a transitional technology to automate immediate needs while awaiting the deployment of these new systems."- **D, RPA developer, University**

The issue of budgets and lack of resources for creating integrations was specifically mentioned by informant A. The lack of resources led to the organization not prioritizing integrations between specific systems, however introducing RPA as a cheaper and faster alternative allowed the organization to move information seamlessly from one system to another:

"But due to economics and resources, the integration was never set up. (...) So we've set up an integration simply using the robot. And it has been very positively received because the task of moving information hasn't enriched the data in any way. You haven't added anything new, you just moved data from one place to another (..), - A, Lead automation, Large governmental organization.

Informant B describes the banking industry to be dominated by major consultant companies that deliver the internal bank core to several banks as “bank-as-a-service”. The main driver for RPA in the bank is to gain a competitive advantage and remain competitive in the banking industry. The option of relying on the consultant firms for new features is expensive and very time-consuming, and such features would be rolled out to all banks using the software, hence reducing the competitive advantage over other banks using the same software. Using RPA as an alternative to traditional development gives the bank an opportunity to not only get new features faster and reduce development costs but also give the organization a competitive edge. In addition, according to the majority of the informants, processes with high volume and many interactions are well suited for RPA. Informant G suggests that:

"A process with a high volume of tasks and many interactions is a good fit for RPA. For example, if this task takes about 5 minutes to handle for each item or case, with 800 items to handle, you can multiply 5 minutes by 800." - G, leader, RPA consultation

Hence, the accumulation effect of partly automated case processing could drastically contribute to time saved and increase efficiency for the organization.

The regulation of processes was a common aspect found amongst all participating organizations, meaning that affecting laws or legislations called for specific management of case processing. Subsequently, this could lead to suppression of change to the overall process, in terms of a longer duration of time to change, or a higher demand for monetary or human resources. RPA becomes a

suitable option when process redesign is not an option, hereby supplementing case handlers, through relieving repetitive tasks that are mandatory to further progress in the case process. Respondent A stated:

“ The process is regulated by law, it was not even an option. It was not put up for discussion to change the particular process” - **A, Lead automation, large governmental organization**

Where this often becomes a key consideration factor to implement RPA, is strengthened by an increasing amount of volume within the given case process. Repercussions of this become apparent when process development factors bear large expenditures of time and resources, i.e., hiring new employees to manage the incoming case volume or the process is regulated to not hire any further. Several respondents considered RPA as the most applicable option to reduce cost-related issues to change. In addition, the increasing volume in the data bank could alternatively lead to several cases receiving slow response time, to no response at all. Respondent I elaborated on this subject:

“(...) We require less humans to manage the same tasks. (...). As an example, to manage the portfolio, we would have to hire a large number of case handlers if that case type was not automated. (...) A specific case type required us to send out approximately 17 000 letters, which could not have been achieved if a human would have done it.” - **A, lead automation, large governmental organization**

Furthermore, several of the organizations expressed that they chronically had too large volume based on the current resources or that events could occur at unforeseen times that would lead to high case processing time. Such volume required that some of the respondents had mandatory employee overtime or had to hire substitute personnel to manage the case process. Thus, respondents found the pre-implementation process to have been costly and/or inefficient. Therefore, RPA became a necessity to handle the said volume, when the process was strongly determined by regulations, had time pressure, or the cost of change was too substantial. Respondent A specified that:

“We had to hire substitutes to handle the extra volume, so the first task was to get rid of the substitutes, while delivering the wanted results with the required staff at hand. It was simply a cover for missing capacity. This was the basis for the implementation of robots”

- A, lead automation on governmental organization

The findings in this chapter provide a helpful baseline for identifying the key factors that affect the adoption of RPA in organizations. When comparing the findings from our study to the current RPA literature concerning implementation, we find significant similarities. The interviews revealed that Legacy systems limit organizational workflow, highlighting the need for automation, such as RPA to expand functionality. This is in line with recent studies on the challenges posed by legacy systems in organizations. The findings also highlighted the need for seamless system integrations. Academic literature highlights that RPA is considered an inexpensive alternative to traditional automation and integration due to the possibility to use existing system infrastructures (Asatiani & Penttinen, 2016; Madakam et al., 2019; Osmundsen et al., 2019; van der Aalst et al., 2005). Furthermore, the results suggest that RPA can assist organizations in strengthening processes and resolving issues with outdated systems, particularly when used as a transition technology for new automation capabilities. RPA is therefore deployed as a means to increase organizational efficiency in case processes, while also lowering the chance of mistakes during human data transfer between systems. However, while literature supports our findings on how RPA leads to fewer errors for data transfers, there is also contrasting research about how RPA could inflict further weaknesses (Asatiani & Penttinen, 2016; Lacity, 2015).

Similarly, academic literature strongly emphasizes the importance of high volume over the repetitive processes that are to be automated. Asatani and Penttinen (2016) describe for instance that some of the criteria for RPA is to have a process with high volume that is performed frequently. In addition, the task must be highly rule-based and standardized (Asatiani & Penttinen, 2016). Volume is in less detail described further in the literature, which makes this somewhat undefined. Organizations must make individual judgments based on internal factors to assess if the volume is suitable.

4.2 Organization and strategy

4.2.1 strong process ownership and a secure platform provided by IT

It became clear that one important aspect for RPA to be successful in case processing is to have clear forms of ownership over the process. A recurring theme from all informants is that the ownership and those responsible for the execution of the Robot must lay in the hands of those responsible for the processes normally in order to maintain compliance and correct execution according to specific standards in the organization. The in-house RPA developer in the bank said that “It is the line that is responsible for its process. It wouldn't have worked if I had to delve deep into loan systems that I have never worked with”, suggesting that the developer can only program the bot according to the rules and standards provided by the division, however, a changing environment requires frequent monitoring and changes which would be far more than the capacity of the development team. Hence, all the respondents suggest that the responsibility of an RPA process is still those carrying out the process on a daily basis.

The role of the IT division/center of excellence however is still deeply integrated in most of the organizations interviewed and a critical success factor for effective implementation in the organization. Informant D expressed that the organization especially benefited in terms of infrastructure and security:

“One important success factor, which I believe we managed to achieve, was that we decided very early on to anchor it in IT and that those who were going to be involved as developers and learn to manage processes and map out and do the whole job from A to Z - these were our own people in full-time positions. (...) we were able to establish an infrastructure and routines around security” - D, RPA developer, University

In fact, all of the organizations excluding the consultants were running RPA in-house with IT providing secure infrastructure. However, the largest differences were how the organizations were developing their RPA processes. In the initial phase, all the organizations received training and

collaborated with consulting firms. A, D and J had however built a strong robot team with less involvement with consultants after this initial phase. I phased out consultants after a few years, while B is in the transition of phasing out consultants and building a strong internal robot team. H has no internal developers working with RPA and relies on consultants to develop the processes, which is a limiting factor for the organization and further improvements:

"We are missing the developer part, we cannot enter the program and set up the process, but beyond that, we can dissect down to the smallest comma in the log. We identify the errors, and we know exactly where things have gone wrong, but unfortunately, we don't have the necessary expertise to go in and fix it ourselves. (...) We have had varying luck with developers, it's also something we should consider as we move forward." - **H, leader of RPA, large governmental organization**

The consensus for the informants is that the organizations should build in-house center-of-excellence teams that develop the RPA programs, while IT provides infrastructure and a secure platform. Informant D explained that depending on consultants because of lacking resources and competency is likely not an ideal strategy in the long term as this is a costly alternative and would lead to the organization not having the necessary human capital:

"And then you become a bit dependent on the consultants because you go half-hearted into it. Maybe there is a lack of resources or lack of time or money or such things, so you don't dedicate yourself 100% to it. And then you may end up in a situation where something goes wrong with these processes or things need to be fixed or the competence is not available in the organization to such a large extent, so you become dependent on just buying this from the consultants.", - **D, RPA developer in a university.**

The informant from the consultant firm also suggested that organizations should keep in-house teams rather than rely on consultants and calls this a paradox and a declaration of trust while pointing out that size and low use of RPA is a factor for organizations relying on consultants instead of building in-house competence.

“Certainly, and that is a paradox, but the need for us is actually a declaration of trust. It should be in-house 100% (..), and that is where Norway falls short, because we do not have large enough volumes or problems to have 20 people working with it in-house in all banks, while we have 150 people working with it across all our customers, which in turn makes it easy for us to transfer competence quickly internally and spread it out to customers. But there is something about them having done things and being open about the mistakes that happen at any time. It builds a lot of quality over time.” – E, Leader, RPA consultation

Lacity & Willcocks (2015) describes the IT function as a critical function in terms of RPA. Yet, it is somewhat still unclear how organizations should balance the IT function with various business functions. The article showcases RPA as a tool where programming skills are not needed for the implementation of RPA. This is also highlighted in newer research (Anagnoste, 2017; Hindel et al., 2020; Osmundsen et al., 2019). This stands in contrast with the findings in this study, where most informants suggest that developers with little to no programming skills are less suited for creating secure and optimized RPA processes such as by using APIs where available. There is however a strong agreement for the importance of business operation professionals having knowledge and expertise about the specific processes and implemented business rules, exactly how is still academically unclear (Willcocks, 2015).

Tauli (2020) suggests that implementing a Center of Excellence (CoE) is one-way organizations can implement RPA in a sustainable way. The CoE benefits the organizations as key personnel and accumulated resources such as best practices or internal knowledge about legacy systems can be used across the various divisions in the organizations (Tauli, 2020). Similar experiences were expressed by most informants, who either had established such a function or were intrigued by the idea. The CoE gains benefits from key personnel with internal knowledge about the internal systems and processes and from IT personnel with knowledge about secure solutions to function as a foundation for internal divisions to get help with developing solid RPA processes. Organizations can use this function to scale the development of RPA processes across the various divisions in an efficient manner.

According to the informants in this study, the general consensus is that the divisions responsible for the processes before automation must still be responsible after the implementation of RPA. Hence, it is of high importance to emphasize that internal control over the processes stays in the divisions. RPA developers and the Center of Excellence can however perform necessary development following the lead of the divisions.

4.2.2 Process analysis

From the interviews, it became apparent that there exists importance in finding appropriate processes to automate. Respondents emphasized that not all processes are suitable for automation and that careful consideration and analysis are required to determine which processes would benefit from RPA. Two of the respondents, E and G, stressed the importance of carefully selecting the appropriate processes for automation. Respondent E went further to explain that the organization must accept that some processes may not have a business case for automation. This means that the organization must not strive to automate the last case type, but rather handle that some processes, or parts of the process can remain unchanged.

"I believe that the understanding that we do not have a business case for automation is very important. Don't try to automate the last type of case that occurs once every leap year. I think that is an important factor to consider. The earlier you can understand that it's okay for the robot to ask for help, the better." -E, Leader, RPA consultation

Furthermore, respondents often mentioned processes with a high volume of cases or transactions as prime candidates for RPA implementation. Automating such processes can result in significant time and cost savings for the organization. Additionally, supplementing the fact that some of these processes contain lower complexity, the benefits of automation are often immediately recognized, such as faster turnaround times and increased accuracy. Respondent G elaborated on this by focusing on the number of repetitions or the number of transactions yielding an RPA-applicable process. However, the number of cases is not the sole factor to determine the volume and suitability

of process automation. Doing so, most automation would lack a complexity aspect. As further explained by respondent G where:

"If you have five cases, and you spend 24 hours on those five cases, suddenly there are a hundred hours in a month that need to be handled. It is the number of cases multiplied by the time per case that gives the volume." - **G, leader, RPA consultation**

On the other hand, it is important to note that while volume is often the main criterion for process selection, the quality element of a process is equally significant, though more challenging to quantify and measure. During the interviews, respondent J emphasized the need to engage in a dialogue with designated individuals in the institutions to gain insight into which processes to prioritize. The respondent further explained that sometimes a process that does not score well mathematically could be desired by customers because it improves quality or addresses a specific issue within the process. Therefore, it is essential to also consider the quality element when selecting which processes to automate using RPA. In other words, processes that may not appear to be high volume should not be overlooked, as they can still have a substantial impact on the outcome of the case process. Focusing on such processes can lead to improved efficiency and effectiveness, ultimately resulting in better-quality processes.

Academic literature highlights the importance of the assessment of RPA opportunities. Choosing the right processes to automate is of high importance for delivering high-value-added automation. For instance, Willcocks et al. advises organizations to form governance boards that are accountable for managing RPA automation, including tracking benefits, assessing opportunities, and prioritizing which processes are to be automated (Willcocks, 2015). Further organizations should focus on processes that are realistic in terms of what RPA can achieve, its benefits, and cost-effectiveness to deliver high value. Issues such as unstructured data or unclear business rules are two drivers for unrealistic RPA cases according to Lacity & Willcocks (2017), As informant E highlights the importance of understanding when there is no business case and that all steps are not necessary to automate, this build on the current literature and can be helpful for organizations that are in the beginner phase.

Geyer-Klingeberg et al., (2018) argue that organizations should strictly assess which processes to implement with RPA. Typical properties of a suitable process are scalable, standardized, and repetitive. Unsuitable automation processes require large investments, and the maintenance cost of an unsuitable process can outweigh the saving costs.

In addition, the Pareto distribution model is of high relevance for RPA, as organizations typically have trends in terms of 80% of the cases that can be explained by 20% of the case types (Lacity & Willcocks, 2017; van der Aalst et al., 2018). Assessing automation in these types of cases is of high importance as the volume is high, which aligns with the findings from the interviews. As the maturity and experience of RPA in organizations grows with time, aligning further processes with the triple win - shareholder, customer, and employee value can be a great way for organizations to assess processes that initially were unfit according to the financial model. This will be further discussed in chapter 4.4.3

4.2.3 RPA as a strategic tool

The quality-enhancing aspect of RPA extends further than streamlining and improving singular processes. As noted through the interviews, participants elaborated on various processes that were affected positively by RPA through changes in the design. Such was often found to be a reduction of time spent on low-complex tasks, thereby assisting workers to do more knowledge-intensive work as elaborated by respondent B.

“(...) For example, sending out new customer declarations. It is a very repetitive task that steals time from advisors. If you can free up the advisors from doing the boring work, they will have much more time to actually be advisors instead of just sitting, pressing the keyboard.” - B, rpa developer in Bank

However, this was found to be distinguished based on the role that the employee was hired for. For instance, the element of complexity is noticeably different in a knowledge-intensive job such as a doctor or nurse, to a simplified case worker. Accordingly, the delivery of quality from RPA

will differ in terms of KPIs, tasks, and roles. Furthermore, this change also results in marginal shifts in the roles of employees, who must now work in conjunction with RPA. As a result, the quality of case processing for more complex cases will mostly depend on the competency of the workers. Several respondents explained that the efficiency, effectiveness, and low error rates provided by RPA are substantial, and it is reasonable to expect that the role of caseworkers may diminish in future employment as a result. Nonetheless, the importance of skilled workers in managing more complex cases cannot be understated, and organizations should prioritize training and development programs to ensure that employees have the necessary competencies to handle these cases effectively.

In addition, while the participants generally believed that the introduction of RPA would not lead to employee resignations, they also acknowledged that the implementation of RPA has brought changes to the case processing workflow. One participant, E, pointed out that effective process design entails treating RPA as the primary route for handling a large number of cases. In this model, RPA is utilized as a tool for automating the processing of numerous cases, while human employees are responsible for handling cases that require manual processing.

As a result, RPA can also function as a tool to foster process change within the organization. The implementation of process improvements can be challenging, as it often requires changes in human behavior. However, by introducing RPA into the process, organizations can create a more seamless transition from the old process to the new one. As respondent E noted, when humans are asked how they would approach a task if they were not required to perform it themselves, they are often more willing to embrace changes that may enhance the process. RPA can help to bridge the gap between the old and new processes by automating repetitive, time-consuming tasks and enabling humans to focus on more complex, challenging tasks. This can lead to a more efficient process overall and a boost in employee satisfaction, as employees are no longer required to perform tedious, repetitive tasks. By introducing RPA into the process, organizations can facilitate change in a way that is more palatable for employees, enabling them to adopt new processes more readily and effectively.

Similarities exist in the integration of technologies, where respondents suggested that RPA can aid in implementing solutions quickly, regardless of the output in the integration, causing self-reinforcing mechanisms that can be created over time. Helping people address the problems they bring forward instills confidence and hope that their concerns will be addressed. This leads to an organization that is engaged in continuous improvement and takes action to address issues as they arise. Respondent E referred to this approach as unique compared to other technologies that may be viewed as a black box, leaving the user unsure of what is happening. By working iteratively and focusing on the present, rather than being overly influenced by long-term changes, individuals can take action on issues as they arise. Such statements are strongly applicable to firms where technological changes might be a slow integrative process. As seen through respondent D's experience:

"We have many processes where large new systems and platforms need to be introduced, which take a very long time to implement and are quite complicated processes. There are also integrations that take two years to implement, so I think the management thought that RPA was good at being a transitional technology (...)" - D, RPA developer in university

Taking a holistic approach to RPA is a definite success factor in proper case process implementation. Although not directly aimed towards case processing, Willcocks et al., (2018) also recognized RPA as a strategic tool. Here through considering various factors such as the total cost and total value contribution of RPA investments. Found was that going beyond traditional cost/benefit analysis and ROI metrics accounts for the long-term impact of RPA on the organization's operations. Extending further than metrics, Plattfaut et al., (2022) also saw the utilization of RPA as a strategic tool to be essential for deployment, though not seeing it as a way to reduce headcount, but as a way to change resource allocation. Such was also a factor seen throughout the conducted interviews, focusing on how process redesign occurs, with employees now having the opportunity to manage more meaningful and complex tasks. This aligns with the thesis assumptions made in the literature on case processing. Taking the case handling meta model into account (van der Aalst et al., 2005) and comparing it to the findings, changes to process

structure inflict greater success in implementation, thereby leading to more efficient case processes.

Moreover, our research takes a strategic approach to understanding RPA, which emphasizes its ability to facilitate change. Approaching RPA strategically involves recognizing its potential as a tool for fostering process change and facilitating the adoption of new processes within organizations. Gaining further value through not merely alterations to the case process itself, but also acquiring new skills in the department of technology. This showcases an organization considering the future, but also calls for an organization with a willingness to embrace change and a commitment to continuous improvement. Therefore the organization must prioritize the development of competencies and training programs to ensure that employees can effectively handle future complexities. With this in mind, our research makes a valuable contribution to the existing literature by highlighting the importance of having a clear purpose for RPA implementation beyond mere process optimization. Such a purpose can greatly enhance the likelihood of success for organizations utilizing RPA.

4.3 Development structures:

4.3.1 - Improved and faster case processing with standardization

As a side effect, several of the informants mentioned that RPA requires standardization and full control over rules and steps in a process. Achieving such control can be challenging, as even the actions of individual case handlers may vary. However, the process of mapping out business rules, steps, and standards for the implementation of RPA can highly benefit the organization. Informant D illustrated how their organization had a somewhat decentralized way of working across the various faculties, where for instance one faculty used a physical printout of documents sent by mail while another faculty used email for the same application process. Rather than automating an inefficient process, the RPA team focused on enhancing case processing by digitizing, standardizing, and optimizing the workflow for all faculties for this specific process prior to automation:

"So one thing is to automate it with RPA, but the other is that when we go through and they have the desire to do something, we also do a digitization part maybe beforehand where we take it away from a manual paper process (...), digitize the process first and then automate it afterward. So that is probably an advantage that many think about, that they don't have to sit and receive letters and open them and read paper applications that students have printed out." - D, RPA developer in university

Standardizing processes across the organization strengthens the organization in terms of better control and governance, however, it also can make it easier for the caseworkers to have a better overview and provides a structured approach to correctly navigate and execute tasks correctly. In addition, regulatory compliance and internal regulations can become more manageable after standardization and partly automation with RPA. The university faced some challenges with routines and procedures which were not in compliance:

"The power is very decentralized, which makes it difficult to get people to work in the way they ideally should, legally, for example, by following the archive law and such things, because it is done in slightly different ways." - D, RPA developer, University

In situations such as these, it is imperative for organizations to devise strategies for RPA to improve compliance. According to Informant E, this facilitates the creation of solutions where RPA can perform more checks than what is possible for humans. This allows the organization to have complex processes that go through many control points in each case, while at the same time not reducing the well-being of the people working alongside the robot. In addition, using RPA for control checks and case processing can ensure increased efficiency and consistency for all cases handled even with several hundred caseworkers:

"(..) I find that there can be a proactive side, as you can build a process that should be quite flexible. And then you get a process that does it the same way, regardless of who did it before. A case processing division with 100 people doing the same type of case will, of

course, handle them differently (...). The main idea is to gain control over the process and thereby build in rules. All the assessments that are currently made based on intuition, must be defined beforehand.” - **E, Leader, RPA consultation**

Several informants describe increased quality assurance and security for case processing after the adoption of RPA. One of the advantages is that the robot has a comprehensive audit trail of all transactions and actions performed which can be used as a unique tool for monitoring performance and compliance which often can be somewhat lacking if performed by humans. With proper deviation management, which is difficult to implement efficiently for manual case working, organizations may achieve a better overview of internal processes and have tighter control:

“But we do believe that the security is higher when using RPA because we can document what has been done with the deviation management, so we also know what has not been done. One should not glorify it, (..) but it is part of the bigger picture. However, you don't have that when you have people punching in. No one knows how far you got yesterday, or what you did, or whether you have filed all your sick notes, or whether you have filed two out of ten, or what you did. So, it is a quality improvement.” - **E, Leader, RPA consultation**

Further, D explained that especially caseworkers and archivists are satisfied with how these processes have been automated, and because of comprehensive business rules and structures, their tasks require less manual work as document settings, legal classifications, correct folders, and case handlers are being automatically assigned by the RPA process. Similarly, Informant A described how their RPA process handles assigning correct case files into the case working systems, which was previously done manually. This automation process contributes 12-17 full-time equivalents to the division annually, however even with extra capacity it would take about three years to clear the backlogs. Informant C, explains that the reduced time spent on manual routine tasks is now better utilized and benefits the customers and the service they provide:

"The additional freed-up time is returned to the customers in the form of more time spent on handling cases and accepting new ones. So, it goes back to the service we provide." -

C, Leader, Large governmental organization

Existing literature has recognized standardization as a condition that is completely necessary in order to be successful with RPA (Lacity & Willcocks, 2017; Syed et al., 2020). Moreover, findings in this study suggest that RPA can act as a driver for organizations to achieve standardization in processes (Paddock, 1985; Syed et al., 2020). Further, two studies suggest that as RPA uses business rules to deliver the same result in the same way, RPA is a driver for increased standardization (Lacity, 2015)

While prior research has focused on the use of RPA in finance, supply chain, and human resources, there is still an unexplored area when it comes to case processing. However, the literature might have a high transferability function as a foundation for research on case processing (Anagnoste, 2017; Lacity & Willcocks, 2017). This study shows that RPA can improve the consistency among all cases, hence reducing the potential for individual caseworkers to influence the outcomes. Additionally, an automated process following business rules can facilitate strong deviation testing and identify anomalies that require additional judgment. Logging of all tasks performed by RPA also contributes to greater internal transparency and compliance (Deloitte, 2017). The academic literature provides a foundation for standardization of processes both prior and while implementing RPA, meanwhile it appears that are differences in how the literature emphasizes the importance compared to the findings in this study. The empirical findings in this study illustrate that standardization is of higher importance than mentioned in RPA literature and plays a crucial role to successfully implement and operate RPA. Further studies should further explore the mechanisms of the impact standardization have on RPA.

Findings from our informants and literature bring up an interesting issue in terms of case processing and how standardization and automation of case processes for organizations may enhance the quality and reduce the possibility for case handlers to engage in actions that go against business standards and rules. For example, the banking sector may benefit from limitations on

what actions case handlers may do to increase governance. This approach may restrict accessibility limitations for certain processes to only accessible by automation, thus reducing who has access to certain processes such as change of transactional information or account numbers. This potential solution aligns with prior literature which emphasizes the organizational need for effective governance and control mechanisms implemented with the use of RPA (Angoste, 2017)

4.3.2 Aligning RPA with the organizational long-term goal

One of the key findings from the interviews is the importance of having clear organizational goals for the implementation of RPA. This was a commonly identified theme, with several respondents highlighting the need for clarity around the purpose and expected outcomes of RPA implementation. In particular, the interviews revealed that there is a tendency for organizations to portray RPA's purpose as solely being a way to create more effective processes without the associated costs of redesign. Some of the respondents suggested that this message can be somewhat ambiguous and that more clarity is needed around the intended benefits of RPA implementation. By establishing clear and measurable goals, organizations can ensure that RPA is implemented in a way that is aligned with their broader strategic objectives and that the benefits of the technology are maximized. Respondent J focused on how organizations need to find a way to clearly demonstrate the benefits of RPA and to ensure that it is implemented in a way that provides value. Such could for instance be the development opportunities it provides for employees within the organization. As suggested by respondent I, who stated that providing new skills and competencies to employees is a significant advantage of using RPA. Further on Respondent I emphasized that organizations often overlook strategies beyond the upsides of implementing RPA:

“ (...) If one had started calculating, it would have been possible to come up with a number. I think the organization could have been better at thinking that through - how many employees would we need to handle this if we hadn't implemented RPA? But it's typical that these values are not always calculated.” - I, RPA developer, Large governmental organization

According to the interviewee, the organization could gain greater benefits by carefully considering the potential benefits and drawbacks of RPA implementation, such as estimating how many employees would be required to handle workloads if RPA was not in place. The interviewee suggests that this type of analysis is not always performed, highlighting a potential gap in organizational decision-making and mismanagement of results control. In order to accomplish this, organizations must consider how RPA will be integrated into their processes over time. Not only will it be organized and implemented, but additionally how it will be maintained and developed in the long run. Organizations can ensure that they are able to unlock the full potential of this technology and use it to drive long-term success by taking a careful and strategic approach to RPA implementation. Respondents generally had this frame of thought, for instance, respondent E meant RPA:

"(...) uses the resources appropriately, as well as increasing the understanding of technology, encouraging people on the technological journey, (...) although it will live over a certain amount of time, then it will be renewed or modernized. " – **E, Leader, mRPA consultation**

Furthermore, the respondent suggested that RPA is a raw material, implying that organizations should prioritize the development of key competencies to better adapt to the changing environment. Another respondent agreed, emphasizing the need for a more comprehensive development and automation understanding in order to expand their automation efforts beyond RPA. According to respondent H:

"We see the need for combined competencies, a holistic understanding of environments, and a more comprehensive development and automation understanding." – **H, Leader RPA, Large governmental organization**

Given the considerations of the respondents, organizations should not rush into RPA processes solely for potential cost savings, effectiveness, and efficiency. Instead, a holistic and strategic strategy should be utilized to ensure that RPA is correctly incorporated into the organization's

technological environment, alongside a focus on long-term success and longevity. This entails careful planning and consultation with all appropriate stakeholders, as well as continuous evaluation and monitoring of RPA processes to ensure they continue to meet the needs and goals of the organization.

Furthermore, the interview findings are in line with the literature on RPA implementation. Willcocks (2015) emphasizes the value of developing a strong business case for RPA implementation and aligning the vision and projected benefits of RPA with the organization's overall strategy. Our findings additionally highlight the need to establish clear and measurable goals for RPA implementation. This contrasts with the tendency for organizations to consider RPA primarily as a means of creating more effective processes without having the expenditures of a redesign. Such is in contrast with Willcocks (2015) who highlights the importance of a strong business case for RPA implementation. Here the focus lies on the complementary nature of RPA and BPM, in which a combination of both could more easily align RPA implementation with the organizational goal. This literature is in conjunction with our findings, where respondents focused on how successful RPA implementation is facilitated through a well-planned choice of process, with continuous monitorization and benefits analysis. As mentioned by interviewee I, there is a lack of benefit-drawback considerations, resulting in management flaws.

However, while both our findings and previous complimentary literature are in agreement, further measures should be taken upon implementation. Such findings only strengthen the view that RPA has a wider framing than the lightweight IT solution literature suggests. This could mean that although RPA has an integration aspect that is easily implemented into already existing legacy systems and case processes, there still is a need for organizational adjustments. Meaning that BPM investments are not dismissed completely, but rather changed to properly deploy RPA services.

4.3.3 - Challenges in financing

Obtaining financial support from organizational management to implement RPA was mentioned by several respondents as a critical success factor. So much that obtaining successful results is

frequently hampered by a lack of financial support. Without adequate funding, there might arise a barrier where organizations could find it difficult to maintain the system, implement RPA, and achieve the desired results. The importance of sufficient financial means were strongly conveyed by respondent J:

"We have heard several people talking about financing, that it is a stumbling block in figuring out who should pay for the processes. (...) In my opinion, having adequate financing has been a critical factor for our success with RPA implementation." – **J, RPA developer, Healthcare**

From the interviews, it was clear that many organizations approach RPA implementation as a project requiring dedicated funding. This funding may be used to support the implementation of an RPA team or to hire consultants for implementation and staff training. Often, funding for RPA implementation is allocated on a year-to-year basis, requiring organizations to apply for funding each time a project is renewed. This funding approach may pose challenges for organizations in terms of planning and budgeting for the long-term implementation of RPA. Drawing further information from respondent J, who suggested that to achieve long-term RPA success, the management must fully support the respective department by integrating RPA into the organizational budget. Since the respondent's organization answered to the public sector, this would mean the government. In the interview the respondent mentioned a low-complexity task, in having to transfer data from one system to another, portraying the importance and struggle to achieve "framework financing".

"I must mention it in relation to the process that I have barely scratched the surface of. From reporting, to prioritization, to execution, deviation management, and logging, it is based on the fact that we have fought a battle for framework financing in the ruling." - **J, RPA developer, Healthcare**

The interviewee also emphasized the importance of their RPA development team having a structured approach to managing tasks and costs. They proposed a yearly project framework that

calculates an employee's annual cost, simplifying cost management and allowing the team to focus on their projects. Rather than estimating the cost of individual processes, they offer a yearly fixed price for RPA services. This approach allows customers to select the best candidates without regard for funding and reduces the need to assess the cost of individual tasks. According to the interviewee, a structured approach to cost management can simplify processes, while also enabling greater productivity within the RPA development teams.

Moreover, based on the interviews, it appears that obtaining funding for RPA development projects is difficult, particularly when the benefits of the project are not directly realized by those who fund it. This is especially true when the project is government-funded, and the benefits are realized by a different division with a separate budget. According to one of the respondents from a public organization:

"But those who can reap the benefits are not the ones who fund the development since we are a government agency. So, we are allocated some funds. If you ask about the financing or what they got in return for the money, it's basically about the costs and such. Overall, the costs are very low compared to what we get in return. So that's the short answer. And to elaborate a bit further, there are challenges in how the costs should be distributed." –

A, Lead automation, Large governmental organization

The respondent further emphasized that the financing for the project is primarily focused on the costs associated with the project, and there are also issues regarding how these costs should be allocated. Despite these problems, the respondent emphasizes that the project's benefits significantly surpass the expenses, emphasizing the significance of considering RPA development projects' long-term benefits when evaluating their financing.

However, the difficulties that organizations encounter in shifting from project-based funding to a more stable and consistent financial framework model are clear, as seen by the insights of respondent D's interview:

"The only challenge we currently see in our organization is that we were a project for a long time and received funding every year to carry out our work. (...). The transition from being a project that receives year-to-year funding to being a part of the core budget has proven to be difficult (...)Therefore, it is important to acknowledge that there are those who own the processes, the process owners, and those who manage and finance the operations, such as ourselves." – **D, RPA developer, University**

The respondent discussed the challenges that come up when organizations are required to operate within the confines of a set budget, especially during uncertain economic times. This is made more pronounced by the fact that there is a frequent gap between those who oversee the managing and funding of the processes and those who own the processes. To ensure that they can achieve adequate resources and funds to maintain their operations, it is crucial that organizations are aware of these obstacles and plan appropriately. Failure to do so may result in the organization being unable to meet its objectives and, ultimately, cause a failed implementation. Therefore, it is important for organizations to approach the transition from project-based funding to long-term financing with caution and to consider their unique circumstances carefully to mitigate the risks associated with this process.

Current literature focuses on how RPA can provide shareholder value, such as high return on investment, competitive advantage, increased scalability, and so on (Lacity & Willcocks, 2017). In accordance with our findings, adequate financing is crucial to succeed with RPA. Such is in line with BPM and project management literature (Alias et al., 2014; Plattfaut et al., 2022), and is transferable over to the realm of RPA. Sufficient financing is a key indicator that the shareholder and top management are invested in the development of RPA, giving incentives that RPA can sustain from a long-term perspective. Such is acknowledged by Syed et al., (2020), where the literature highlights the necessity of securing buy-in from all stakeholders, ranging from upper-level management to end-users, thereby strengthening the likelihood of RPA success.

At the same time, there has been little focus on how organizations should finance the tool. There has not been a discussion on how organizations can finance RPA, besides having lower costs than traditional process automation and software development. Estimates for licensing cost for one

robot is estimated to be around 5000 - 8000 EUR annually (Anagnoste, 2017; Asatiani & Penttinen, 2016), while estimations from the interviews suggest a licensing cost is around 15000 EUR. Despite the contrast between the prior literature and the current licensing costs, it is still crucial to communicate this information to stakeholders and top management because it refers to the comparison between the cost of a regular FTE and RPA. Such was seen throughout our findings to be approximately $\frac{1}{3}$ cheaper by using RPA as a solution. Although RPA bears additional costs in terms of server and staff maintenance, these KPIs could potentially convey various stakeholders to invest in RPA implementation and development. As elaborated by various respondents, RPA often starts as a project which then transforms into a core division within the organizational structure. When the top management is fully integrated into the overall concept created by the RPA project, they are more likely to allocate more funding to staff and IT functions. This may also indicate a trend toward organizations that invest more heavily in technology.

However, findings in this study illustrate that organizations may experience difficulties with financing when going from an internal trial project to an established division that is a part of the core budget. One of the reasons may be that there is a clear difference between who is experiencing the benefits of the automated process and the internal division that develops and maintains it. Thus, organizations using strict budgeting principles when implementing RPA are likely to have difficulties with scaling as the budgets simply do not encourage further development (Neely et al., 2003). Flexible ways of financing RPA development are crucial if the organization wishes to further develop new automated processes.

As the majority of the participants of this study are public companies located in the Nordic market, the current literature is non-reflective. On the other hand, because of this predominance of public companies, an interesting issue has arisen in terms of financial funding. Such is seen by the mentioned complex relationship between the realization of results and the RPA division. In a public organization, results might often be difficult to measure and quantify. Therefore, a potential RPA project in a public company could find it demanding to be granted sufficient funding because instant results are not present in terms of numerical or monetary value. There is a potential pitfall in this situation where several processes that meet the appropriate criteria for automation may not

be selected for RPA implementation. Hence, one might question the maturity level of public organizations for RPA investments and how invested top management is in this type of automation.

4.3.4 - Guidelines and plan for measuring benefits.

Cost-savings are one of the most highlighted expected benefits of RPA. This is also one of the most documented benefits for the organization we interviewed. However, a narrow scope with only cutting costs in terms of reduced labor hours is not ideal and could be a barrier to implementing new automation processes and opportunities impacting shareholders. But first, let us look at what the returns on investments are.

All the participants described RPA as a tool with a high return on investment. According to informant A, the cost of one robot is approximately one fourth of the costs it takes to have one employee for a year, "So that the investment, license, and costs are saved before the first half-year". According to the informant, the cost for a license is approximately 150 000 NOK, which has the capacity to work as much as a minimum of four humans and can function for twenty-four hours a day, however, there are also operating, and development costs involved which further increases the total cost.

The budgets and realized benefits for these organizations are somewhat unclear and we do not have access to concrete data materials, however, some informants presented estimates for the budget and effect. These estimates are likely to be for all RPA processes in this specific organization. Informant A estimates that by using the resources equivalent to four full-time employees, the organization realizes the benefits of at least 35 FTE:

"Here we are just under four employees, annually we add work capacity equivalents to 35 FTE. That is very conservatively said, so when we really want to brag, we say between 50 and 70. But we can document almost to the minute and second that it is 35 person-years being added. Yes, and this is just the beginning. So if you talk to us in a year, I think we will have doubled it." – **A, Lead Automation, Large governmental Organization**

Further, the informant estimates that for every million the organization has invested in RPA the results are in the range of 8 to 9 million in effect. Somewhat similar results can be seen for informant D who has been able to save around 40 million NOK in hours saved. This has allowed the organization to allocate its resources in new ways and improve the efficiency of its operations: “So we have had an annual budget of two to three million but have saved maybe up to 40 million KR in hours saved. (...) But for the university's part, we earn more from it than we lose.”

Informant J estimates that their RPA processes have done work that would require over 60 FTE. Most of these hours have been saved and implemented during the last few years. While informant I estimated that last year RPA processes did the equivalent of 20 full-time positions last year. Informant B estimates that their organization has saved around 4.3 FTE on RPA. Informant H has saved 2.8 FTE on RPA. Additionally, RPA has made it possible to reduce from 5 to 2.5 employees working full-time on this task, enabling the organization to focus on other tasks which require more competency and decision-making.

However, the benefits of RPA go beyond only reducing the required work time, the majority of the respondents suggest that organizations working with RPA should aim for increased benefits in various ways and that it could benefit the employees, customers, and stakeholders, in other words, “the triple win”. The informants described various ways and possibilities where the customers and organization benefited by using RPA for case processing. Informant E said that typical benefits are a more «profitable growth, and they can create better quality in the process, in that way get more customers and faster case processing, which in turn increases their reputation.” This suggests that faster and better quality in case processing has a positive effect on reputation and customers.

While informant A illustrated this type of automation has significantly increased the quality and allowed for parallel control of cases for more accurate results. Additionally, the customers can be treated more fairly and transparent as multiple cases for the same customer can now be dealt with in the same timeframe:

“When it comes to automation, it has increased quality a lot because it has enabled parallel control of the case [so that decisions are more accurate, and the same case handler will handle multiple cases for the same customer at the same time]. It greatly increases quality, and society will benefit from it.” – **A, Lead automation, Large Governmental Organization**

Several of the informants describe a positive change in the way their customers are affected by RPA. Informant B, who is working for a bank suggests that using RPA delivers great quality for each case and quick processing time. This allows advisors to deliver better customer service and spend more time with customers:

“Quick response time or processing time. And the quality of the work that the robot delivers. It is always the same in each case. Also, the fact that we release enough time to advisors. That they can actually be proper advisors for their clients.” - **B, RPA developer, Bank**

While informant J on the other hand suggests that health professionals can increase time spent with patients and provide medical knowledge and care for patients rather than copying and pasting into internal journal systems:

“Freeing up time from repetitive tasks so that they can concentrate on more meaningful tasks is important, but our hope and part of the vision is that if a nurse doesn't have to spend time cutting and pasting in a record-keeping system, they could spend an extra 5 minutes at the patient's bedside. By freeing up that time, we can create a better patient experience.” – **J, RPA developer, Healthcare**

Whereas informant 5 suggests that RPA could improve resources management and customer experience. The example provided was during covid-19 when a county council was to provide a service for vaccination queue for the inhabitants. The initial process was manual and slow, in addition, it was performed by health professionals. Doctors and nurses were already high in

demand, which made it challenging to implement a queue without drastically reducing already existing healthcare services for the public. With RPA, it was possible to quickly implement a solution that could handle large amounts of case processing whilst absorbing fewer resources from other services in order to have a functional service quality for customers.

Informant A described a previous situation where RPA highly benefited the core organization and the employees.

"So the robot was set up as a necessity because there wasn't enough capacity to handle everything, all the tasks that needed to be done. So initially, the robot was quite welcomed. And then, in the second process, there was something called deviation management. Basically, it was the handling of deviations, things that were not processed on time and such. And previously, they had forced overtime almost a week per month in connection with the main expiration." – **A, Lead automation, Large governmental organization**

The organization simply did not have the necessary human resources, budget, or way of handling the excessive tasks. The solution was to implement RPA to reduce the workload for the employees and stay within the budget. One of the concerns the developer highlighted was that reducing overtime could affect job satisfaction negatively, however for most of the division, the opposite was true:

"people's overtime may be seen as a benefit, but it certainly wasn't. It was seen as a nuisance and a burden that they had to work overtime, and there was scheduled overtime for one week per month. For those who have children who had to be taken care of or driven to practice, it was great that we were able to alleviate the pressure and volume of work."
– **A, Lead automation, Large governmental organization**

The budget and instruction for this organization simply did not allow for additional capacity, leaving some of the employees with unwanted overtime. This developer is also describing an

occurring theme in this organization - where the number of cases is far more excessive than the current capacity. A part of their focus is on tasks that would not be possible without RPA:

"For some of the processes we are setting up now, this is work that otherwise would not have been done because there is not enough capacity for it. If you talk to other, smaller businesses, the volume is not as extreme as ours. But even with hundreds or even tens of thousands of cases, there is always a process that cannot be done due to lack of capacity. So we are trying to add capacity to things that have not been done, rather than just replacing people." – **A, Lead automation, Large governmental organization**

The informants explain that time saving is absolutely the easiest and currently the most important measure. However, it becomes clear that there is a want and need for organizations to measure parameters other than just time savings for measuring their performance, such as other quality elements and ripple effects, which are difficult to quantify and calculate. Several informants emphasize the importance of having a dialogue with the internal divisions that reap the benefits of RPA to find parameters or particular issues with a process that would highly increase the benefits. Informant J illustrates this with:

"Time-saving is the top priority and the easiest to calculate. However, there is also a quality element that is more difficult to quantify and calculate. In such cases, we have a dialogue with designated individuals in the different health enterprises. It could be that the one that performs relatively poorly mathematically is preferred by our customers because it improves the quality or there is a particular issue with the process. (...)

It's very easy for us to calculate how much time we spend on the first line. But then you potentially have a nurse and a senior physician waiting, who can't do their job. If this takes an hour or two or whatever it may be, it's out of operation, so it's not an effective use of time for anyone." – **J, RPA developer, Healthcare**

The ripple effect may be strong in organizations, focusing solely on predefined mathematical models could be a barrier and leave out major improvements for customers, employees, and the

organization. It is advisable for the organization to implement strategies for what kind of benefits they want to achieve besides the hours saved. For example, in one specific process where health professionals sent letters by mail to the patients, RPA allowed for digital letters. The current estimation is that the organization saves around 50 000 kr each month, or 600 000 kr per year by reducing labor costs, postage, and other costs associated with physical letters. The customers benefit by receiving letters faster while health professionals benefit by increasing time spent on tasks that require competency or care for patients rather than spending time printing out letters and mailing them.

In the prior chapter, we discussed the importance of achieving sufficient financial and management support. In addition to this, the Triple-win model has been frequently mentioned to portray how RPA can benefit the organization, employees, and customers (Lacity & Willcocks, 2017). From our main findings, it is evident that this model holds value and can be utilized to convey various stakeholders about the benefits RPA can create. Throughout our interviews, respondents emphasized how cost savings based on FTEs are a main component of benefits realization toward RPA success. RPA, here functions as a way to reduce costs by dismissing additional FTEs, while simultaneously adding value through greater accuracy, process speed, and quality. Furthermore, RPA can be used to improve compliance and operational agility, ultimately increasing shareholder value. These numerical values were acknowledged by our findings to be in part with how the literature portrays it (Hindel et al., 2020; Syed et al., 2020; van der Aalst et al., 2005). Similarities in findings and literature also exist from the employee's perspective, where RPA can reduce tedious and repetitive tasks, allowing employees to develop capabilities in new parts of the organization. In addition, RPA also were found to free up time for employees that are specialized in fields that require more in-depth customer interactions. Resulting in greater quality performance and job satisfaction. Repercussions from RPA deployment will therefore create an overall better customer experience, being handed better quality products or services at a faster rate of time.

However, while the benefits in the triple-win model view the benefits to be greatly saturated, our research has found a large focus area on cost savings to be the most interesting benefit to present in order to show RPAs impact. Meironke and Kühnel (2022) argues for instance that the most used

metrics are due to the quantitative nature of RPA, while less used dimensions are far more challenging to measure. Further, they argue that both vendors and academic literature highlight benefits that lack further evaluations for how to assess these types of benefits, which can potentially lead to poor investments due to misconceptions around benefits (Hindel et al., 2020; Meironke & Kühnel, 2022).

This weakness might reflect how organizations currently are facing difficulties in measuring such important benefits, which can be an underlying factor for why some of the organizations are experiencing difficulties gaining stronger shareholder buy-in for RPA. Kokina & Blanchette (2019) states that estimations of benefits are often imprecise, hence organizations should create alternative methods of measurement that are suitable for the organization, such as qualitative measures, or measure RPA implication on organizational changes due to new ways of working. (Kokina & Blanchette, 2019; Wanner et al., 2019.; Wellmann et al., 2020) An alternative way according to the literature is to embed RPA into existing frameworks in the organization, such as BPM lifecycle assessment to further evaluate the performance and suitability of RPA internally (Aguirre & Rodriguez, 2017; Meironke & Kühnel, 2022). Thus, organizations should strive to develop suitable measurements to document the benefits they achieve.

In addition to the presented benefits, it is also worth mentioning the topic of volume as a limitation. Since our interviews were primarily conducted through domestic organizations, we discovered a disadvantage that might occur due to the lack of convincing benefits from being situated in a smaller market. As one of our interviewees revealed, in comparison to other nations, where the respondent mentioned an organization that has over 1600 robots running concurrently, the Norwegian market for RPA technologies and services is relatively small. The potential restrictions and difficulties that Norwegian firms may encounter when using RPA are highlighted by this observation, which is intriguing for research. For instance, smaller businesses may find it difficult to justify the cost of installing RPA solutions due to the limited number of processes they must automate. Furthermore, given the smaller pool of potential clients in Norway compared to other nations, the small market size may make it challenging for RPA service providers to establish a footing there. This poses a compelling subject for discussion, exploring whether the RPA in

smaller markets lags behind larger implementations or whether large-scale automation of smaller markets is a necessity. Alternatively, it may be necessary to consider other strategies for process management. However, to gain a more comprehensive understanding of the dynamics involved in the use and implementation of RPA in smaller markets, further research is needed to identify the specific factors that influence this issue.

4.4 Humans and stakeholders

4.4.1 Employee engagement and successful readjustments

The findings from the interviews suggest that employee skepticism can act as a significant barrier to the successful implementation of RPA. Several respondents suggested that the adoption of RPA may be hampered by employees' resistance to adopting new working practices and technological advancements, particularly senior employees. Additionally, some workers may be resistant to the use of RPA because they have misconceptions about its capabilities and restrictions. These obstacles may cause implementation delays and reduce the potential advantages of RPA. Respondent A used an example from their implementation period to illustrate this barrier:

"So I started telling them that we have a preparatory proposal. And then they became skeptical because they would have to learn new ways of working. I know the person who was skeptical well, as she is [age], so quite mature. She said that she is so old and that it is so difficult to learn something new." – **A, Lead automation, Large governmental organization**

This is consistent with the previous response of respondent E, which highlighted human psychology as a barrier to RPA implementation. The respondent stressed that the implementation of process improvements calls for people to alter their behavior. Adopting process improvements might be difficult since individuals are creatures of habit, making it challenging to adapt to new behaviors. Respondent E pointed out:

"(...) and I think that's the kind of human psychology that is essential. When you're working on process improvement, it's very challenging to implement it because people must change their behavior. But if you ask a person how they would do it if they didn't have to do it themselves, then they have a lot more ideas." – **E, Leader, RPA consultation**

This barrier might create a crucial organizational issue through the employees' reluctance to use RPA and their lack of trust in the technology. A further example was given by Respondent I, who despite the organization's efforts to implement RPA, still had some individual caseworkers that were hesitant to utilize the robots to send standardized correspondence, as they prefer to add a personal touch to their communications. This reluctance to use RPA may be due to a lack of trust in technology or a belief that it cannot adequately perform the task to the same standard as a human. Additionally, the interviewee mentions that some employees may not have enough information about RPA's capabilities, which may contribute to their reluctance to use it. The interviewee also notes that some employees blame RPA for system errors or limitations, even though there is no evidence to support these claims. Employees' reluctance is such an important barrier to overcome because a lack of trust in the technology can lead to inconsistencies in work quality when tasks are performed manually, resulting in errors and inconsistencies that could be costly for the organization. Furthermore, employees' failure to supply accurate information to the system due to RPA mistrust might result in inaccurate or incomplete results, which can have significant implications in crucial areas such as finance and compliance. Such was also found to be an issue by another respondent, C, who called this a loss of control. What the respondent said was that:

"There was no dissatisfaction among employees with, for example, losing work tasks. However, what could be seen in the beginning was that when tasks were done manually before, there was a feeling of control. And it was very clear who had done what. Whereas when you turn on the robot, it could become such that if something went wrong, it was more difficult to troubleshoot. What did those error messages mean? Additionally, there could be something wrong with the physical scanner that had nothing to do with the robot. But because it was a robot doing it, it wasn't caught in the way it should have been. And

there can be this uncertainty, which can create a situation where you don't quite trust that it works with the robot.” – **C, Leader, Large governmental organization**

Although employees are generally not dissatisfied with the loss of certain tasks, there is a feeling of uncertainty and lack of trust in the RPA system. In this regard, it is crucial to identify and address any errors or malfunctions and ensure that employees understand how the RPA system operates to enhance their confidence in the new technology. Moreover, while it is rare to encounter resistance after the implementation of RPA, respondent E also noted that people are generally not initially positive about RPA. Instead, it is only after they understand the base concept that they fully acknowledge the possibilities. This could be strengthened through positive feedback from other companies in similar industries, with similar job roles, to make employees more receptive to the idea. The interviewee gives an example of a bank where employees initially felt overwhelmed by their workload but were relieved after RPA implementation, leading to increased positivity towards the technology. Understanding the sources of resistance and how to overcome them is crucial in successfully implementing RPA in an organization.

Based on the insights gathered from the interviews, it is recommended that organizations should introduce RPA from the bottom up, rather than from the top down. It is crucial to communicate the purpose and benefits of the technology clearly to employees in order to build trust and confidence. This success factor was noted by several of the respondents, however, respondent D elaborated this straightforward:

"So, it's probably super important if you're going to enter an organization, that you're very humble and cautious about how you introduce it, from the bottom up, not top down, and that you're clear about what you want to achieve with the technology and what the point of it is." – **D, RPA developer, University**

The interviewees propose emphasizing the advantages of RPA, such as the elimination of tiresome tasks like updating spreadsheets or uploading files in a delayed system. Employees may first be skeptical of RPA, but eventually, they come to see that it is not scary and can be helpful. Therefore,

to ensure a successful implementation, implementing RPA should be done gradually with clear communication and employee training. Offering an introductory session that teaches the fundamentals of RPA and how it can be used to simplify and automate operations is one efficient method to do this. According to informant B, such services are frequently offered by consultants or in-house:

"Most of them are very positive. I find that most people don't find it particularly rewarding to do boring and repetitive tasks. Everyone is very positive about getting rid of the work. (...) We went through the finance department. There is a lot of manual work there. We'll see how the reactions are. I invited them to an introductory meeting. It was very popular to attend that meeting. There was a good atmosphere for automating it." – B, RPA developer, Bank

By providing an introductory course, employees can better understand how RPA can benefit their work and the organization as a whole. This can also help to build trust and confidence in the technology, which is crucial for successful implementation. Ultimately, investing in employee training and education can help to ensure that the organization gets the most out of its RPA implementation, while also helping employees to feel more comfortable with the new technology.

This incremental implementation was seen throughout the conducted interviews, where a key success factor for RPA is often reached by fully getting the employees engaged in the change of case processes. As seen through respondent D, where employees or stakeholders noticed the benefits of RPA in a small area and approached the team to expand the implementation. It has been emphasized that the approach taken in this process is crucial for the success of RPA implementation. The reason why getting employees fully adapted is so important is that the development of RPA is a complex process that expands further than developers and consultants. It requires input from various stakeholders within an organization. Through the analysis of an interview with respondent G, it has been found that employees who currently perform manual tasks have a significant influence on the development of RPA. Interviewee G notes that these employees provide crucial information to the RPA development team, outlining how they currently

perform the task manually. This information is used to create a tailored RPA process that meets the specific requirements of the organization. Respondent G presented the realization that cooperation has to be incorporated between employees and developers. Said where that:

"They have a significant influence on it because they set the premises that show us how they perform the job manually today. Then, we will program and create this robot process based on their specifications. So they have a significant influence on it. They are the ones who have the knowledge of how this robot process is manually performed today, and we as developers must have this knowledge. And then it is possible to ask some questions about whether it is rational and that this process is such." – **G, Leader, RPA consultation**

Additionally, putting robotic process automation into practice necessitates a collaborative effort between human workers and robots, also known as a "human in the loop" method by some respondents. The interview with responder H underlined the significance of this process, stating that it makes sure that difficult activities that the robot cannot handle are managed successfully, potential faults are discovered, and feedback is given to the development team. Respondent H described a procedure that still needs manual input and understanding:

"So it's not a fully automated process, but we have some human in the loop there, which is what it's beautifully called. However, it's also a challenge, and there may be some questions about the interaction between humans and robots. It requires adaptation from humans and collaboration with the robot." – **H, Leader RPA, Large governmental organization**

The interviewee did, however, also point out that interactions between humans and robots can be difficult and call for major adaptations from human workers. To ensure successful implementation, it is crucial to create a collaborative atmosphere where humans and robots may efficiently cooperate. Respondent A acknowledged this parallel approach as well, citing some of their procedures as follows:

“(...) When we set up the robot to automate manual tasks, the robot often worked in parallel with the case handlers so that they could still do their job. However, where we set up the robot to replace a missing integration - that is, moving data from one system to another or from one database to another” – **A, Lead automation, Large governmental organization**

The observations imply that a crucial aspect to consider while deploying RPA is the interaction between humans and robots. Additionally, it was acknowledged how crucial it is to strike a balance between automation and human interaction to guarantee the effectiveness and efficiency of the RPA system, thereby preventing any detrimental effects on staff knowledge and morale. Therefore, the company must provide the necessary support to enable productive human-robot collaboration and develop a positive employee perception of RPA.

Employee engagement is seen across the literature as a main contributing factor to success in RPA implementation (Syed et al., 2020). As acknowledged by the findings, a main barrier affecting successful adaptation is reluctance by employees. This skepticism can directly hamper the process and was initially found through employees that were well integrated into certain routines or tasks. Plattfaut et al., (2022) discuss this topic, referring to change management as a factor for success. Such was in accordance with our main findings, tackling change in human behavior to be rather difficult to overcome. An organization failing to properly see this risk of dismissive actions could potentially be affected in its implementation phase. As our findings suggest, this is commonly seen throughout new technological advancements affecting the case process. Why such events occur could be defined as the employees' sense of losing control of their manual tasks, where a potential error in the process could be tedious to understand and correct.

To overcome this barrier Plattfaut et al., (2022) recommend effective communication about RPA towards the process employees. Here by defining a gradual step-by-step approach to properly frame what the product has to offer and how it will positively impact the process. This involves engagement by not only the IT division but also employees within the process itself. Such is also acknowledged by the thesis findings, using a gradual approach of introductory training, revealing

that the robot is not a mechanical object that is put in to replace current staff. Further, we also see the need for know-how about the case process, corresponding with the literature. However, where Plattfaut et al., (2022) choose to focus on top management involvement, allowing process workers' engagement in process development, we rather see it as a bottom-up integration. Furthermore, there is a recurring theme amongst scholars, framing the need for adequate training, where the focus is on the redeployment of existing staff. Although we acknowledge the fact that further development will ultimately result in an alteration to process roles, our findings also suggest that the case process could sustain employees with similar functions, working in line with RPA.

4.4.2 Caseworkers are key for further improvements

The people with the most in-depth knowledge of the details of the process are the end-users, who are frequently the personnel conducting the manual process. They are aware of the process's advantages and disadvantages as well as any potential pitfalls. For the development team to accurately program the RPA process, this information is essential. In a previously mentioned response with respondent G, it was emphasized that the end-users have a substantial impact on the development process by supplying the essential specifications. Additionally, as already mentioned, the application of RPA benefits the firm and offers chances for employee growth. As respondent I mentioned in their interview, internal staff who were formerly case process workers now build RPA procedures after obtaining training. This approach provides employees with new competencies, and their knowledge of the processes can be utilized to optimize the RPA's performance. As a result, involving the end-users in the RPA implementation process can significantly impact the success of the implementation. The end-users knowledge and input can ensure that the RPA process is accurate, efficient, and optimized to the organizational needs.

Additionally, as respondent G underlined, knowledge transfer is important for the successful adoption of RPA. Given that RPA is still an emerging technology, it is crucial to comprehend both its strengths and weaknesses. This entails having a thorough understanding of both the procedures that the use of robots will provide and any potential deviations that might call for human intervention. In the interview, it was noted that:

" (...) I believe that the knowledge around RPA will be continued. Then you see the tool as useful, and it is more important to have the knowledge that you learn how to move even a document from here to there, and handle it like this and like that. There will be some manual handling, there will be exceptions that will be handled manually, so that knowledge must remain in the department that handles it today. So, the robot will not deviate from that knowledge, it is just a tool that makes them do it very quickly, efficiently, and accurately, but the knowledge of the process must still remain." - **G, leader, RPA consultation**

Despite the fact that robots can do tasks swiftly and effectively, respondent G argues that knowledge of the procedures inside the department in charge of handling them should still be retained. Robots should be seen as a tool to improve and speed up operations, not as a threat. This highlights the need for effective knowledge transfer strategies to ensure that the relevant knowledge is retained within the organization. By doing this, businesses may use RPA to automate operations while retaining the knowledge needed to address deviations and guarantee positive results.

During the interviews, every respondent was asked if they believed that RPA may result in the loss of case process knowledge. Frequently, it was assumed that this would not be the case. Respondents did, however, recognize the potential risk. Respondent D's insights provide interesting perspectives on the potential impact of RPA implementation on employee behavior. Respondent D argues that RPA implementation will not lead to employees no longer using the systems they are meant to work on, but rather that they will be relieved of some of the tedious tasks. When further asked about the loss of knowledge D said:

"I don't think so. They will still have to work in these systems even if we use RPA to automate some processes. We need to consider what we are automating, which is mainly tasks such as document transfers and similar activities. (...)" - **D, RPA developer, University**

However, the respondent also acknowledges that there is still much work that cannot be automated and that there is a risk of becoming rusty in knowing how to perform tasks manually if RPA handles them too much. This is especially true for legacy systems, which are frequently thought of as being difficult to use.

“This means that the situation where the case handlers stop using the systems is unlikely to occur. However, there is a risk that if we automate too much using RPA, especially in a legacy system such as the archive system, (...) there is a risk that the users will become rusty in knowing how to perform these tasks manually. So yes, there is a risk (...) - D, RPA developer, University

Therefore, according to Respondent D, it's critical to determine which jobs may be automated and which ones require manual intervention. Respondent D emphasizes the importance of establishing a balance between the necessity for case process workers to keep knowledge of the systems and manual procedures and the automation of operations. The risk of personnel losing knowledge of the systems can be reduced with the aid of efficient training and knowledge transfer procedures.

Such a success factor was demonstrated in the implementation of RPA by respondent H organization, which noted that RPA has contributed to their organization's increased understanding of how processes operate. This knowledge is due, in part, to varying levels of developer competence that have required employees to have a more in-depth understanding of processes, even if they are not involved in programming them in detail. The respondent even mentioned that multiple employees have become familiar with the processes to the point of being almost too knowledgeable, making the organization vulnerable if they were to leave.

“We can be inside the program goals and see all the steps, how it works, so several of us know the processes almost too well (...) We remember things from five years back, which are still in the program, so you have to figure it out. It is documented and all, but that

finger-spitting feeling is useful no matter what job you have.” - H, leader of RPA in a governmental organization

Even though they do not use the processes on a regular basis, they must understand why an error occurred to increase their understanding of the procedure. Respondent H underlines the value of learning the specifics of a process and stresses how essential this information is in any employment. Respondent J, in contrast, clarified that the majority of the automated operations that were introduced were administrative or back-end processes. These procedures had no effect on the personnel's primary duties, such as patient care. As a result, the respondent did not see any loss in terms of employee responsibilities or job duties. The respondent, on the other hand, made the case that the use of robotic process automation may free up workers' time from administrative duties and enable them to concentrate more on patient care. Overall, the respondent did not perceive any detrimental effects from the adoption of robotic process automation on the job security or obligations of employees. As a result, the significance of knowledge loss varies depending on what the organization provides as a product or service.

Moreover, respondent E agreed with respondent H that it was crucial to combine knowledge of current procedures and technology improvements. Respondent E highlighted the significance of knowledgeable staff members who are aware of how the robot functions and how it may be supported. Respondent E further emphasized the advantages of putting in place routines to boost the likelihood of successful implementation. Further advice was that businesses should utilize robots given all the benefits they provide, but only if they stick to existing practices and educate themselves on how the robot functions. According to the answer, using the robot won't be advantageous for the business if the staff doesn't adhere to set procedures. Considering this, the respondent added the following information:

"I believe that each individual in every company will have a more future-oriented toolbox by understanding how to use technology in a smart way. Because this technology is actually available. It's not very futuristic." - E, Leader, RPA consultation

The information gathered from the interviews shows that effective knowledge transfer and employee involvement are key components of a successful RPA implementation. Employee participation guarantees that the RPA process is precisely programmed, tailored to the requirements of the firm, and offers chances for employee development. Organizations can utilize RPA to streamline their operations while preserving the essential competence to address deviations and guarantee positive results by transferring knowledge. The results of this study are thus in line with previous research, emphasizing the significance of staff engagement, knowledge transfer, and training as key success criteria for RPA adoption (Plattfaut et al., 2022; Syed et al., 2020).

According to our research, there is a strong importance on a sufficient relationship between the current staff and RPA. Employee engagement, as discussed in the preceding chapter, is crucial for the efficient integration of RPA within the organizational framework. Employees have valuable process knowledge and are, as mentioned, one of the main primary drivers for implementation and development. Furthermore, employee knowledge is commonly perceived as a resource that must be preserved over time as organizations develop greater amounts of automation (Syed et al., 2020). As a result, the redeployment of employees to new roles and functions could potentially lead to a loss of experience and expertise in the area of the process that employees were previously responsible for. If the organization focuses too much on redeployment to new complex tasks there might become a scarcity of staff consisting of valuable knowledge in the specific case process department (Anagnoste, 2017). This dilemma was seen from one of the organizations in our findings, where the employees' seniority, with insight into process details and technology, could cause a risk if employees eventually resign. Moreover, a loss of process knowledge might also affect ownership and accountability for the RPA process, which in the worst case causes a negative impact on commitment and engagement from employees. Organizations must develop effective knowledge management strategies for preserving and transferring this knowledge to prevent valuable process knowledge from being lost or distorted during the redeployment process. By doing so, organizations can leverage the valuable process knowledge of employees, thereby improving the performance of RPA while at the same time redeploying staff to new roles or tasks.

4.5 Summary of the results and related factors

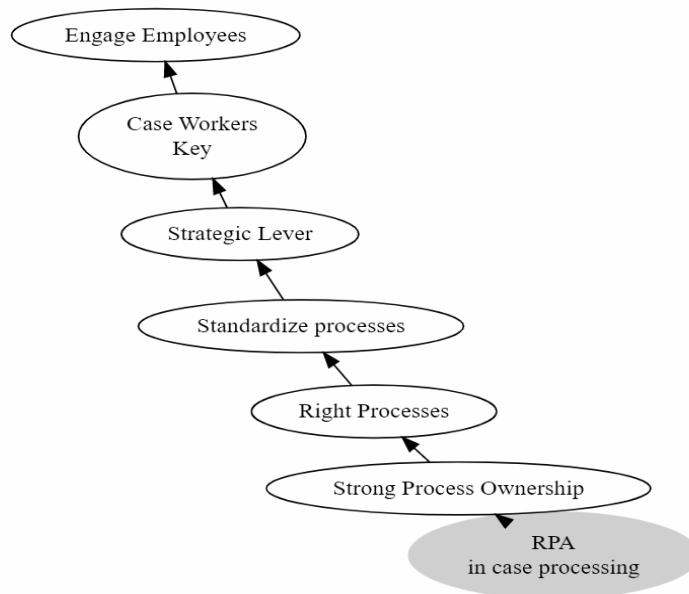
In the following table 4, we present an overview of the 10 success factors for RPA implementation. These factors are organized into three main categories: organization and strategy, development structures, and humans and stakeholders. There is a description of each factor, including an interview quote. The fourth column provides academic references to support similar findings, and the last column represents which of the respondents mentioned the respective factor as important.

Table 1 Table of success factors

Successfactor	Description	Example quote	Literature source	Interviews
Strong process ownership	Clearly define who should be responsible for the process. The respective division is responsible for RPA actions	"...It is the line that is responsible for its process. It wouldn't have worked if I had to deliver deep into loan systems that I have never worked with" - Informant B - Developer bank	(Pantfau et al., 2022; Sassengood, 2016; Syed et al., 2020)	1, 2, 4, 5, 7, 8, 9
Secure platform by IT	IT must provide secure platforms and infrastructure for secure routines	One important success factor, which I believe we managed to achieve at times, was that we decided very early on to anchor it in IT (...) we were able to establish an infrastructure and routines around security" - Informant D, Developer university	(Ashtari & Penttinen, 2016; Lacity & Willcocks, 2017)	1, 4, 5, 7,
Find the right processes	Carefully consider which processes to automate. Case processes with large volume and repetitive tasks are often sought for.	"I believe that the understanding that we do not have a business case for automations is very important. Don't try to automate the last type of case that occurs once every leap year. I think that is an important factor to consider. The earlier you can understand that it is okay for the robot to ask for help, the better." - Informant E, Leader RPA consultation	(Geyer-Klingenberg et al., 2018; Lacity & Willcocks, 2017)	1, 5, 7, 8, 10
Use RPA as a strategic lever	Understand that RPA can enhance case processing beyond volume and profit, but also through quality and development.	"We have many processes where large new systems and platforms need to be introduced, which take a very long time to implement and are quite complicated processes. There are also integrations that take a two years to implement, so I think the management thought that RPA was good at being a transitional technology (...)" - Informant D, Developer university	(Pantfau et al., 2022; Willcocks et al., 2015)	1, 4, 5, 7, 10
Standardize to improve processes	Improve control and consistency by mapping out rules and decisions to standardize the results	"A case processing division with 100 people doing the same type of case will, of course, handle them differently (...). The main idea is to gain control over the process and thereby build in rules. All the assessments that are currently made based on intuition must be defined beforehand." - Informant E, Leader RPA consultation	(Agnoste, 2017; Geyer-Klingenberg et al., 2018; Paddock, 1985; Syed et al., 2020; Willcocks et al., 2017)	1, 2, 4, 5, 8
Align RPA with long term goals	The organization should not rush RPA implementation but align it with their long term goals. This calls for correct planning training of staff, and fostering technological development.	" (...) If one had started calculating, it would have been possible to come up with a number. I think the organization could have been better at thinking that the origin - how many employees would we need to handle this if we hadn't implemented RPA? But it's typical that these values are not always calculated." - Informant I, RPA developer in government organization	(Willcocks, 2015)	9, 4, 1, 10
Plan for financing	Achieve sufficient financial backing and clearly state who should pay for the process development. Create a framework for financing.	"We have heard several people talking about financing that it is a stumbling block in figuring out who should pay for the processes. (...) In my opinion, having adequate financing has been a critical factor for our success with RPA implementation on." - Informant J, RPA developer in Healthcare	(Agnoste, 2017; Neely et al., 2003)	1, 4, 10
Plan and realises for benefits	Plan for how the organization can increase benefits besides cost reduction, i.e. Quality, faster case processing, consistency.	"...Quick response time or processing time. And the quality of the work that the robot delivers. It is always the same on each case. (...) Also, the fact that we release enough time to advisors. That they can actually be proper advisors for their clients." - Informant B, Developer bank	(Aguirre & Rodriguez, 2017; Kohana & Blanchette, 2019; Merouak & Kuhlra, 2022)	2, 1, 10
Engage the employees	Gradually implement and clearly communicate RPA. Reveal the benefits, and introduce it from the bottom-up, not top-down.	"So, it's probably super important if you're going to enter an organization, that you're very humble and cautious about how you introduce it, from the bottom up, not top down, and that you're clear about what you want to achieve with the technology and what the point of it is." - Informant D, Developer university	(Pantfau et al., 2022)	1, 2, 4, 5, 9, 10
Case workers are key for further improvements	Knowledge workers have the knowledge to further improve the processes	" (...) I believe that the knowledge around RPA will be continued. Then you see the tool as useful, and it is more important to have the knowledge that you learn how to move even a document from here to there, and handle it like this and like that. There will be some manual handling there will be exceptions that will be handled manually, so that knowledge must remain in the department that handles it today. So the robot will not deviate from that knowledge, it is just a tool that makes them do it very quickly, efficiently, and accurately, but the knowledge of the process must still remain." - Informant G, Leader RPA consultant	(Agnoste, 2017; Pantfau et al., 2022; Syed et al., 2020)	1, 2, 4, 5, 7, 9, 10

Frequency cannot be used to determine the weight of importance. However, it gives us greater insight into what factors the informants determine to be important. The three most frequent mentions are *strong ownership of the process, caseworkers are key for further improvements and engage the employees*. In addition, three other factors were mentioned five times: *standardize the processes, use RPA as a strategic lever, and find the right processes*. It appears that employees represent a strong factor in successfully implementing RPA into an organization. This may be due to the strong influence and knowledge the employees have over current processes and potential new automation tasks in the organization. Moreover, fundamentally the automation initiative requires technical aspects such as strong process ownership and finding the right process to function and develop. Figure 5 builds on this thought and ranks the more technical and governance aspects closer to the core and success of RPA in case processes, whilst we still believe the furthest factors are critical for success. The figure illustrates the order of importance, where the baseline is the organizational structure, this being a fundamental factor for implementation. Further, development structures are highlighted to be a secondary factor that builds on top of the organizational aspects. Thereafter, employees and case workers impact on successful implementation and maintenance.

Figure 5 Importance success factors



5.0 Conclusion

RPA is perceived as a lightweight approach that is cost-efficient and effective, making it a lucrative solution to conventional automation and process redesign. Despite its benefits, RPA must be properly implemented for it to be successful in an organization. Therefore, in order to properly integrate RPA into their current system and case process, organizational management should carefully assess the potential challenges and limitations. The findings in this study are from interviews with 10 different informants using RPA for case processing. Two of the participants are consultants, while the remaining consists of leaders, RPA developers, and caseworkers using RPA for case processing internally. This study focuses on the research question:

What are the success factors for RPA in case processing within organizations?

By following the principles of grounded theory, we have created a model to showcase 10 success factors for implementing RPA in case processing. We have divided the success factors in three different groups. Organization and strategy, development strategies, and humans and stakeholders. The three groups are crucial, hence removing one is likely to highly impact the effectiveness of RPA.

There are four success factors in the organizational group. Firstly, organizations should have strong internal ownership over automated processes. Secondly, IT should provide a platform for RPA to function securely. Thirdly, the organization should identify the right processes for this type of automation. Lastly, organizations may use automation as a lever for further transformation.

Development structures consist of four factors. Firstly, organizations should standardize processes to improve and facilitate automation. Secondly, organizations should make sure the use of RPA is aligning with the long-term goals of the organization. Thirdly, organizations should have plans for financing and budgets for the development and maintenance of automation. Lastly, organizations should have frameworks and guidelines for what kind of benefits they strive for.

The third group is humans and stakeholders, consisting of two factors. The first being how organizations should engage the employees and have clear communication about the strategy and limitations of RPA. The second, how the caseworkers are key for further improvements - caseworkers have prior knowledge of the process. They understand the process functions and pitfalls, while also providing value to drive process changes.

Overall, the findings in this study largely support prior literature and research. However, several contradictory points have emerged. This research suggests that RPA developers need knowledge about programming and secure ways of configuring the system to develop adequate automation processes, while at the same time, these developers should work full-time to be effective with automation. On the other hand, the literature explicitly mentions that this is not necessary.

The second contradictory point is that the majority of research on RPA claims an extended list of benefits to be achievable with the use of RPA. A few studies challenge this view by arguing there is a lack of evidence to support how this can be achieved. Findings in this study show that organizations struggle with documenting benefits that are non-numerical and go beyond efficiency and cost-savings.

5.1 Theoretical implications for future research

This master thesis supplements the existing literature by further validating prior research on RPA success factors. Concurrently it allows for an extended point of view by showcasing new opinions of the research participants. In addition, the master thesis contributes to the theory by highlighting important missing literature for RPA in case processing. By using grounded theory, we have studied how organizations have experienced using RPA for case processing and developed a theoretical framework with 10 success factors. This framework may contribute to scholars and provide insightful knowledge for future studies.

Two neglected success factors where research is unexplored are plans for financing and plans for benefits. The financial question is interesting as this was brought up by several of the informants

in this study. We were unable to find significant academic literature debating how organizations should organize and finance internal RPA projects. We contribute to the debate by displaying how a yearly budget may be unsuitable for automation initiatives' long-term success. The thesis promotes framework financing or the use of untraditional ways of budgeting, such as beyond budgeting as a means to overcome this barrier. Thereafter, we demonstrate how plans for benefits are strongly tilted towards a cost-savings agenda. This tendency is to be found at a large scale in contemporary literature. However, prior literature explicitly mentions a broad scope of benefits, without further elaborating the benefits realization method. By reviewing this, both the literature and the findings in this study indicate a flaw in the measurement of effectiveness in these types of benefits. Thus, our implications highlight a significant gap in obtaining and utilizing benefits, such as service and quality enhancements, as well as employee and customer satisfaction.

Upon reflection, our implications suggest future research to investigate how organizations can develop structures and frameworks for how organizations can finance RPA initiatives. Organizational complexity is likely to impact funding, and in turn, governmentally funded companies are likely to be different than private organizations. Through a comparative analysis, potential research can cover a more thorough and saturated market, comparing differentiated financing structures for RPA. Additionally, the research could expand the financing perspective by illustrating the correlation between stakeholder interest and RPA, specifically highlighting which benefits are highly valued to incentivize RPA implementation and development. This could be done through both a qualitative and quantitative framework. However, since our research framework was of a qualitative manner based on internal stakeholders, an interesting angle could be to conduct quantitative research on the quality benefits customers achieve through automated case processes. This is especially intriguing because harder-to-measure benefits such as quality can serve to justify RPA implementation for smaller firms or markets lacking overall volume to showcase FTE and cost savings.

5.2 Practical implications

Our research provides practical implications, highlighting the benefits of RPA. Managers could potentially gain valuable insight into how RPA can transform organizational performance. Specifically, the significance of how RPA can improve internal case processes and the IT environment, through the benefits of efficiently improving processes by reducing errors, increasing accuracy, and reducing repetitive and consuming tasks. Furthermore, RPA may promote process and technical transformation beyond conventional BPM approaches, resulting in increased organizational competency. The research could also pique the interest of developers and consultants who may be intrigued by analyzing the findings coming from various actors in the field of robotic process automation.

However, managers must note that RPA implementation is a complex process. Therefore, each of their own must carefully consider various factors that might affect successful adaptation. First through revealing which organization might be the most suited for RPA, and finding the processes that are the simplest to automate. Additionally, it is also imperative to assess a wide range of factors that go further than just FTE savings and efficiency enhancements. Here, including the quality aspects that RPA provides. Therefore, this research provides managers with additional information beyond the apparent benefits, giving them a reason to view the broader value of RPA. Moreover, the research identified that RPA could foster process and technological change past conventional BPM practices. Utilizing RPA within case processing can emerge as a technological domain, which can again further enhance organizational competency. A cultural change within an organization might also create repercussions in terms of RPA allowing for more high-value activities and work, ultimately leading to a motivated workforce, which again improves case processing performance.

Finally, by acknowledging this complexity, managers become aware of how to effectively communicate with various stakeholders about RPA. As defined by this thesis there is a definite importance in adherence to both employees, customers, and shareholders. RPA must assess the level of support from top management or shareholders. This is a crucial aspect in obtaining the

necessary resources, including finances, to implement and further develop RPA. Furthermore, the development of RPA requires effective communication with case process employees, involving them in the integration of the product from the bottom-up, and showcasing the potential of RPA in enhancing their work and facilitating career development. Our thesis can therefore supply managers with knowledge about successful RPA management and implementation, which can reduce the likelihood of facing negative feedback about the product. Thereby organizations will mitigate unfavorable outcomes, leading to greater or desired results.

5.3 limitations

Limitations were found in several aspects of our thesis. The qualitative approach of using 10 informants is a limitation, as it cannot be used for generalizing the findings. This is primarily due to the restricted time frame limiting us to selecting participants based on who responded to our inquiries. However, this statement does not question the competency of respondents, rather, it demonstrates the limitation of only presenting the current situation within these organizations.

Further elaborating on this. When conducting research about success factors, it is a challenge to find suitable organizations and participants to interview. We decided to include developers, leaders, consultants, and a caseworker to gain insight from different angles. However, in hindsight, this study could have focused on one of the groups. It is apparent that the organizations in this study use the tool to varying degrees, which might hinder the consistency in the findings through large variances in RPA utilization. Further, we acknowledge the ratio between public and private organizations. If we exclude the consultants, the majority of the informants are from governmental organizations. Hence, this study might to a lesser degree represent the private sector. Opting to focus on a single sector may reduce the risk of findings not being transferable between organizations.

Finally, our ability to promote and comprehend RPA may limit the study. While we have some practical experience with technology, we may not possess the necessary expertise to fully understand its complexity. This could limit our ability to establish a precise methodological

framework for the study, which may have resulted in the interviews being somewhat generalized in nature. Additionally, since the retrieved data from respondents often focused on the concept of RPA as a whole, the flaw could potentially be that the answers lack precision in what we tried to achieve with case processing.

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Appendix 1: Interview proposal

Vil du delta i forskningsprosjektet «Suksessfaktorer for RPA og saksbehandling i organisasjoner»

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er undersøke hvordan organisasjoner kan bruke Robotic process automation (RPA) i saksbehandling for å styrke prosesser i organisasjoner. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Dette forskningsprosjektet er en masteroppgave ved Universitetet i Agder. I prosjektet vil vi undersøke suksessfaktorer og barrierer knyttet til hvordan organisasjoner bruker RPA som et verktøy for å styrke kjerneprosesser i en organisasjon, spesielt knyttet til saksbehandling.

Hvem er ansvarlig for forskningsprosjektet?

Universitetet i Agder er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?

Du får spørsmål om å delta i prosjektet på grunn av din kunnskap og erfaring knyttet til RPA. Omtrent 5 deltakere vil bidra i masterprosjektet.

Hva innebærer det for deg å delta?

Dersom du ønsker å delta i prosjektet vil du delta i et intervju. Dette vil ta inntil en time. Det vil bli spilt spørsmål knyttet til RPA, implementering i din organisasjon, svakheter samt gevinstrealisering. Under samtalen vil vi ta lydopptak og notater. Lydopptaket vil bli transkribert, anonymisert og deretter slettet.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket. Det er kun prosjektgruppen, bestående av to studenter og en veileder ved Universitetet i Agder som vil ha tilgang til råmateriale.

Videre vil lydfil oppbevares gjennom sikker lagring, og vil slettet i etterkant av transkribering. Alle navn og personopplysninger vil *lagres på egen navneliste adskilt fra øvrige data. I dette prosjektet vil både informanter og virksomheter anonymiseres og omtales på en måte slik at de ikke kan gjenkjennes.*

Hva skjer med personopplysningene dine når forskningsprosjektet avsluttes?

Prosjektet vil etter planen avsluttes 1. juni 2023. Etter prosjektslutt vil datamaterialet med dine personopplysninger anonymiseres. Lydopptaket vil bli destruert.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Universitetet i Agder har Sikt – Kunnskapssektorens tjenesteleverandørs personverntjenester vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke opplysninger vi behandler om deg, og å få utlevert en kopi av opplysningene
- å få rettet opplysninger om deg som er feil eller misvisende
- å få slettet personopplysninger om deg
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger

Hvis du har spørsmål til studien, eller ønsker å vite mer om eller benytte deg av dine rettigheter, ta kontakt med:

- *Universitetet i Agder, ved professor Andreas Wald, andreas.wald@uia.no. Student, Ole Skålin: oleks18@student.uia.no. Student, Martin Carlström: martie18@student.uia.no*
- Vårt personvernombud: personvernombud@uia.no

Hvis du har spørsmål knyttet til vurderingen av prosjektet som er gjort av Sikts personverntjenester ta kontakt på:

- Epost: personverntjenester@sikt.no, eller telefon: 53 21 15 00.

Med vennlig hilsen

Andreas Wald
Prosjektansvarlig
(Forsker/veileder)

Ole Skålin & Martin Carlström
student

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet og har fått anledning til å stille spørsmål. Jeg samtykker til:

-å delta i intervju

-Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, ca 01.06.2023

(Signert av prosjektdeltaker, dato)

Appendix 2: Interview guide

Interview guide:

Introduction

- About us
- About the study
- Anonymous and complies with requirements by NSD

Part 1:

- Education
- Role in current position
- Experience with RPA

Part 2:

- Ask about the phases:
 - o Initial
 - o Design-process
 - o Development
 - o Implementing
 - o Managing
 - Keywords: Control systems, responsibility, strategic, users, processes, communication, organization, targets, results, problems

Part 3:

- What are key steps to ensure that RPA strengthen core processes?
- What metrics are being used when evaluating results?
- How does the RPA team look like?
- Who are project owner and responsible for achieving goals?

Part 4:

- Has RPA been successful for your organization?
- Has RPA resulted in unexpected benefits?
- What kind of tasks does the robot do?
- Have you and other employees the necessary trust in the robot work correctly?
- Can you tell us something about the mistakes and large pitfalls for your organization and RPA?

Discussion paper: The concept of «international».

Ole Skålin

This discussion paper is a requirement for students at the University of Agder in order to submit their master's thesis. The university has three key concepts in its strategy: responsibility, innovation, and internationalization. I have been assigned the concept of internationalization, and in this assignment, I will reflect on both my two years in the master's program and the master's thesis considering international trends.

This period at the School of Business at the University of Agder has been very enjoyable and educational. Additionally, I have gotten to know many pleasant and talented people. The school's focus on internationalization has allowed us to become acquainted with students from other countries and has provided us with unique knowledge and experience from their home countries. I would like to thank you all for five wonderful years here in Kristiansand. I highly recommend this school to everyone, as they truly know how to develop young and eager-to-learn individuals.

Presentation of the thesis

I have a big passion for technology, and after being introduced to the topic of RPA, this was something I found interesting. This master thesis is based around the concept of Robotic process automation (RPA) and case processing. The concept of RPA is about automating tasks that is performed by human workers. The robot can imitate human workers in a software environment and use the same graphical interphase or by using APIs. RPA does not require any changes to the current software used in order to function (Hindel et al., 2020; van der Aalst et al., 2018). This type of automation tool is cost effective and can provide organizations with benefits that they otherwise could not achieve. The literature has an extensive list of potential benefits of the tool, such as costs savings and inexpensive integrations (Hindel et al., 2020; van der Aalst et al., 2018) In addition, literature highlight increase effectiveness and quality, leading to less errors in a working environment. The human workers can be used for more value-adding activities by automating tasks usually performed by workers (Asatiani & Penttinen, 2016; Lacity &

Willcocks, 2017).

The literature on Robotic process automation reveals a knowledge gap on how organizations can identify success factors and barriers for the implementation of RPA (Syed et al., 2020). This research can address the current research gap and provide additional insight that can be crucial for researchers and organizations. We use the research question “What are the success factors for RPA in case processing within organizations?” and interview 10 informants from both public and private organizations. We identified 10 success factors among the informants. The study is based on grounded theory, with a qualitative research design. The data was gathered by performing 10 qualitative interviews with informants from several companies. The informants were developers, leaders, consultants and case workers.

The concept of international

International is defined as “involving more than one country” in Cambridge dictionary. In a business environment, more often the term internationalization is used to describe how organizations and industries expand across countries (Johanson & Vahlne, 1990). This could for example be used to explain organizations having licensing agreement, creating foreign production plants, or engaging in international trade. The rising popularity of internationalization has led to a society of Globalization, where goods, people, ideas services, including remote labor for IT services, flows across borders (Knight, 2003). Globalization has changed the world and offers opportunities and risks that has never been seen before. It affects countries different due to the nature of economy, priorities and traditions.

How international trends and forces affect the topic.

International forces has drastically shaped technology and the adoption of RPA. I will now present some factors affecting the topic:

Globalization and increased competition: Globalization have increased the competitiveness in the market, affecting organizations that wishes to stay competitive to invest and use new technology. Organizations that wish to achieve increased efficiency, compliance and productivity must take

advantage of new technologies. Typically, such technological advancements, and both hardware and software are created and developed in various countries.

Workforce: international trends affect how organizations use labor. Organizations are now facing higher competitiveness for skilled workers. The distribution of workers is changing with trends of outsourcing, remote work and mobility across border for workers. This is typically seen in the IT-industry with outsourcing and mobility of workers. The typical objective of outsourcing is to cut costs.

Technological advancements: With new advancement on technology organizations have now the possibility to leverage new technology such as automation to transform the organization to become more efficient and reduce costs.

Compliance and regulations: With organizations working across borders, implementing automation can be a great way for organizations to have an easier time dealing with regulations. Meanwhile, internationalization does also have controversies. Outsourcing technology and data across borders provide organizations with new types of issues such as GDPR or issues regarding geopolitical barriers (Li et al., 2019). In addition, other risks such as disruption of service or personnel shortfalls are (Aubert et al., 1998)

Research question

The research question in this study was “*“What are the success factors for RPA in case processing?”*”. The question was not developed with the concept of international as a target, however we were still able to see relevant results that demonstrate how international forces and trends impact technology and robotic process automation. This study may provide organizations and academia a broader understanding of how internationalization impact automation.

Findings

In this master thesis we created a framework of success factors for using Robotic process automation in organizations. We found 10 success factors and place them in three groups: Organization and strategy, development structures and humans and stakeholders. The three most mentioned factors are strong ownership of the process, caseworkers are key for further

improvements and engage the employees. Following three factors mentioned five times: standardize the processes, use rpa as a strategic lever and finding the right processes.

In this study we observed that organizations using RPA experimented with a shift in how they operated in IT. Many organizations use outsourcing to cut costs on certain tasks, however with the implementation of RPA, several of the organizations explained that they were in the processes of reducing external service providers and increase the use of internal teams and developers. RPA simply allowed the organizations to develop internal teams for automation. Building strong internal robot teams can be very beneficial for organizations due to the critical expertise and possibilities to maintain and configure the robots based on the need. Internal teams have higher chance for clear communication and the possibility to alter the robot specifications. In addition, having an automation team inhouse gives the organization more leverage to be offensive and invest and use cutting edge new technologies to stay far ahead compared to competition.

Implementing RPA allows organizations to leverage the repetitive and rule based tasks in the organization that was previously handled by external companies or a division in another country to be performed inhouse. Fersht & Slaby (2012) demonstrate that the cost of introducing RPA for automation can be cheaper than performing similar tasks manually. They estimate that a position that costs \$80k in the US could be outsourced for \$30k, while a robot could perform the same task for \$15k.

International forces have played a crucial role for organizations regardless of size, that are now able to use such tools that were developed in other parts of the world. Regardless of origin, technology remains borderless and affects organization across the world.

We observed that organizations can use RPA as a way to leverage volume. Organizations can use automation on case processing to handle large amount of processes and tasks whilst at the same time avoiding some of the typical expenses for scaling. In this study, we found that several organizations implemented this tool to do tasks that would require a substantial investment in

human resources to be able to perform the tasks of the current volume. Rpa makes the organization able to handle increased volume efficient – as this automation tool can perform the tasks faster than manual labor while at the same time work 24 hours a day. This reduces the need to invest in infrastructure, office spaces and other infrastructure.

Norwegian organizations often have well established and efficient manual processes, in addition to relatively low volume compared to other countries. The need for automation is less dominant in these types of markets where the volume is relatively low and still manageable. However the need for automation is still highly relevant and a great opportunity to develop a stronger organization in Norway. Meanwhile, the opposite is true in several foreign markets that typically operate in markets with substantially higher volume. These companies may face difficulties in handling such volume manually, thus engaging in robotic process automation may be a great way to reduce bottlenecks and handle higher workloads.

In addition, with the use of RPA organizations can have better control and optimize its resources better. Human labor can be used for more value-adding tasks that require decision making or problem-solving skills. This optimization can make it easier for organizations to scale, by using robots where suitable while keeping knowledgeable staff. In this way organizations

Conclusion:

To conclude this discussion paper: we see that international trends and forces has drastically influenced the way organization function today. Internationalization has led to technological and economical growth. Borderless technology and trade agreements has led to organizations all across the world can use automation practices relatively cheap. This facilitates increased productivity for a large number of organizations. Furthermore, international forces has enabled organizations to operate across borders and in various markets that can have different regulations and standards. With the help of automation, international organizations can establish themselves and use automatizations for facilitation compliance with local regulations whilst keeping manual labor low as well as costs.

Additionally, this study found a shift in how organizations use automation practices to reduce costs and outsourced personnel. Using inhouse developers, organizations can achieve tighter control over the internal processes while at the same time strive for cost reduction. While this study was not developed for the concept of internationalization in mind, the study still reveals that importance of international trends and forces on the subject. The relevance of internationalization is still high and is likely to be so in the in the following decades.

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Discussion paper: The concept of “Responsible”

– Martin Carlström

Introduction

As complementary material, this discussion paper is a part of the AACSB Assurance of Learning process. Accreditation by AACSB entails a thorough external review of several factors. The University of Agder (UiA) School of Business and Law had a thorough evaluation by AACSB (Universitetet i Agder, n.d.). The evaluation procedure guaranteed that the school met the requirements. Therefore, writing this paper could potentially contribute to the continuous improvement of the master's program while allowing me to showcase my self-reflective abilities. The main objective of this paper will be to examine the broad concept of "responsible". In addition, the paper will reflect upon the relevance of this term in relation to our thesis topic on the success factors of Robotic Process Automation (RPA) in case processing.

Our thesis applies grounded theory and is conducted in a qualitative manner. The motivation for this thesis was found through personal at-hand experience with RPA, resulting in the research question “*What are the success factors for RPA in case processing?*”. RPA is a relatively new technological automation tool, which can be implemented into several existing organizational processes or systems. Simplified, RPA can perform repetitive and tedious tasks, in the same fashion as humans, however at a lower cost and to a far more precise standard (Plattfaut, 2019; Taulli, 2020, pp. 22–26). We conducted the research by involving 10 participants in individual semi-structured interviews. The participants were from various organizations in the Norwegian domestic market and are seen as professionals close to the phenomenon. From the data collected, we identified 10 success factors and developed a framework that contrasts previous literature with our findings.

Discussion

In the following sections, discussions will be made on how the thesis relates to the concept of responsibility. In doing so, the paper will identify and discuss ethical challenges that arise from

our research question, operating environment, unit of analysis, and findings. Moreover, the paper will present strategies for handling these challenges. Through examination of the ethical dimension of our thesis, it can potentially contribute to the development of responsible practices in the field of RPA in case processing. The School of Business and Law at the University of Agder places a high value on responsibility, covering a variety of topics like companies meeting their social commitments, sustainable business practices, and prudent financial management. It is also encouraged ethical conduct, which includes abiding by international and national law (Universitetet i Agder, 2021). Considering these values, one could draw reflective opinions on several aspects of the thesis conducted and the RPA implementation material.

First, the thesis faced several ethical issues while doing this study that had to do with how sensitive material should be handled and how interviewees' privacy rights should be upheld. In response, we strived to preserve a strong feeling of accountability by following the rules and ethical standards established by the Norwegian Centre for Research Data (NSD) and the University of Agder (UiA, n.d.; Sikt, n.d.). Following these guidelines ensured that we conducted the interviews to a professional standard. First, we made sure that respondents participated voluntarily. The first inquiries were sent out via e-mail to each of the respondents, with the complementary interview guideline, information letter, and disclosure agreement. Furthermore, we collected the data using voice-recording devices provided by the university. This was then recorded without the use of an internet connection, minimizing the risk of interference. Each interview was conducted in the participant's native language and transcribed. The information gathered for the study was stored securely stored and assured to be deleted by June 2023. We as researchers emphasized that each interview was to be made anonymous to mitigate the risk of bias in terms of withheld information. Although the interviews were made anonymous, each participant can view their own words due to their recognition of examples and topics discussed, as well as their sampling description.

The relevant knowledge gained through this process is transferable over to ethical conduct that one may encounter in future workplaces. Here through increased recognition of potential occurrences of ethical dilemmas, causing potential scenario that calls for decisions between

ethical or unethical practices. This is particularly important in a professional setting, where one must correspond with co-workers, customers, and stakeholders. Although, while these research standards are not completely identical to those of other organizations, the experience can contribute to greater abilities in building trust and transparency, thereby acting responsibly across sectors. Therefore, this thesis lays a foundation for professional adherence to ethical standards.

Responsibility challenges are also present in RPA theory. Although not directly portrayed as a concern, one might still argue that there are glimpses of discussion material. These were to some extent discussed throughout our interview process, and the interview guideline catered towards covering concerning topics. In our thesis, we talked about the possible advantages of FTE (full-time equivalent) savings through the utilization of robotic process automation (RPA) in case processing. FTE savings is referred to as the main benefit of RPA (Lacity & Willcocks, 2017). This is often seen in a high-volume process, where success with RPA is accomplished and measured in a monetary sense. Although such cost savings may be seen as a benefit of deploying RPA, it is important to consider the ethical concerns that arise when we use the term "responsible" in this situation. Reduced employment could result from FTE savings, which would have an impact on people's livelihoods and job security. This effect prompts ethical questions and calls for accountability from businesses using RPA technology. Therefore, businesses should make sure that RPA implementation does not conflict with any laws or ethical standards and have a plan in place to handle any negative effects on the workforce. Throughout our 10 conducted interviews, none of the respondents presented cases of RPA leading to resignations. However, some of the respondents did acknowledge the fact that RPA may in some instances lead to decreases or total removal of future employment into the prior position. This does not necessarily mean a negative direction of managerial practices. In most cases, as seen in our findings, RPA implementation led to increased investments and opportunities in more complex workplace positions. Here, staff is allowed to increase intellectual capacity, and transfer their knowledge into meaningful work. This opens new career paths for employees. In addition, the thesis indicated an increased interest amongst respondents in organizational redesign, putting more emphasis on technological change. Having the opportunity to discuss these concerns with

professionals, has resulted in more competence in responsible organizational restructuring and management.

In the Impact Assessment of UiA responsible is described as “You can no longer just think profit” (Universitetet i Agder, 2021, p. 1). Such a description bears relevance in RPA, as the mentioned FTE savings are not the only realized benefit of automation. Lacity & Willcocks, (2017), presents the “triple-win model”, proposing that RPA can benefit employees, customers, and shareholders. Examples are employees’ reduction of repetitive and mundane tasks. Similarly, customers can benefit from faster response times and improved service quality. At the same time, RPA enables organizations to achieve higher returns on investment (ROI), delivering benefits to shareholders. However, while RPA deployment holds significant benefits, it is important to acknowledge that certain challenges may arise that require responsible management. The cost reductions brought about by RPA can lead to the redeployment of certain staff members, which may be quite stressful and difficult for workers who must retrain or take on new responsibilities. Therefore, while streamlining processes through automation might cause greater ROI, managers must still regard employees' well-being. Managers must focus on not pressuring the employees into unwanted roles. In the worst case, this can lead to employees’ resigning.

Furthermore, RPA may provide challenges to ethics in customer-facing professions. Such could be seen where automated procedures might conflict with client expectations or a client's preference for human interaction. For instance, customers could prefer human interaction when disclosing private or sensitive information, and the shift toward automation may provide ethical challenges in such circumstances. Hence, it is imperative that organizations approach RPA deployment with careful consideration of the potential implications involved. This change in the management of data may also affect the staff working alongside the robot. Our thesis directed some of the interview questions on how RPA might inflict loss of process knowledge, or potential security issues. The primary reason for these questions was to get a better understanding of how the future organizational environment would be structured. Here, we wished to address the concern of whether RPA would inflict a loss of internal competency in their operations. This, however, was not the instance, and the respondents stressed the

importance of sustaining and developing the current skills of the employees. Concerning security, RPA would strengthen this through the involved audit trail, and rule-based system. However, while increased security could be seen as a positive aspect of automation, there may be a pitfall in the monitoring aspect of the audit trail. Employees must be ensured that this trail is not continuously utilized to monitor their daily work, but rather be viewed if unforeseen errors occur. If mismanaged, this would hamper the responsibility of organizations to have trust in employees.

In addition, the thesis discovered discrimination challenges of process selection. Prioritization of processes is often selected based on specific criteria. This is stressed by literature through the “Pareto principle”, where 80% of processes are suited to RPA, whereas 20 % should remain untouched due to the process complexity (van der Aalst et al., 2018). Furthermore, our interviews suggested that the processes selected for automation are the ones that have the highest amount of volume. The primary reason behind this, is as mentioned earlier, that these processes yield the largest amount of FTE savings, thereby giving the greatest ROI. Repercussions from this bias of process selection will be that processes that could have a positive impact on automation are not prioritized. Thereby organizations could potentially lose out on the quality aspect that RPA can deliver.

Conclusion

Considering our master's thesis on the success factors of robotic process automation (RPA) in case processing, this discussion paper has examined the idea of responsibility. Although the main objective of our thesis was not an ethical agenda, there can be identified ethical issues. Such is brought up by our research topic, operating environment, and unit of analysis. According to our research, case processing implementing RPA can result in significant FTE savings, which could raise ethical issues concerning employee job security and reduced employment. Businesses utilizing RPA technology must ensure that adoption does not violate moral principles and must plan accordingly to handle any unfavorable effects on the workforce. RPA may also present ethical dilemmas for those working in customer-facing fields. Furthermore, we discovered that based on volume and FTE savings, prioritizing processes for automation may lead to bias and

loss of potential quality benefits that RPA can provide. To reduce associated risks and maximize the advantages of RPA, companies must design suitable measures to address potential negative outcomes. Thus, this discussion paper reveals potential dilemmas directed toward responsible management when faced with process automation. Organizations must ensure that the advantages of RPA are realized while limiting potential negative effects for employees, consumers, and stakeholders by recognizing and addressing ethical challenges. By doing so, organizations could more easily achieve a triple-win standard of benefits realization.

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