Implementation of Robotic Process Automation, Case Study Palkeet

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The objective of this thesis is to validate existing theoretical models for companies implementing robotic process automation by examining and analysing the implementation process concluded by the Finnish governmental company, Palkeet.

In the first chapters the author presents the chosen theoretical models by going through the different phases included. By using a qualitative research method, a case study is conducted by interviewing the development executive, Eija Hartikainen, from Palkeet to find out what phases they have in their implementation process. After this, it could be analysed whether the phases were similar to the theoretical models.

The results concluded that the phases of the implementation followed the ones in the models in question and could be easily divided under the parts presented in them. Therefore, this validated the models to be used for planning the implementation process in equivalent cases.

In addition to this, the challenges in the implementation are presented and examined. It is presumable that similar issues within the process could arise in equivalent situations. To further demonstrate the potential benefits of RPA, the author analyses the positive effects RPA has had on Palkeet.

Contents

1   Introduction

Digitalization has an effect on all industries in one way or another. Its touch is visible on all levels of business, from customer acquisition to product development, distribution, after-sale services, and the development of operational efficiency. (Laaksola 2019.)

Due to digitalization in all industries, at least a part of the work is executed by a computer, data stored in different databases, and usually there is a human operating in these digital environments acting like a robot. This robot-like working varies in every field of work, but the concept stays the same. People are doing repetitive routine tasks that do not necessarily require a human to be completed. Robotic process automation (RPA) takes the robot out of the human. The employee with average knowledge of a back-office process has multiple repetitive routine tasks that are exhausting and uninteresting. (Willcocks 2017.)

Near the beginning of the 20th century, the renowned inventor and engineer Nikola Tesla stunned scientific and social observers with his vision:

> "In the twenty-first century, the robot will take the place which slave labor occupied in ancient civilization. There is no reason at all why most of this should not come to pass in less than a century, freeing mankind to pursue its higher aspirations." (Dube 2022.)

In the field of banking the mortgage industry is still mostly people-driven, which is inherently uneconomic and inefficient given that deals with commoditized products. However, this offers an opportunity to attain a competitive advantage by having automation perform the commoditized tasks within the mortgage process and move humans to more human positions to study analytics, assess risks and develop new creative products and services to make the overall customer experience superior and differentiated. (Dube 2022.)

According to Laaksola (2019), customer centricity is becoming the focus of business, which is why this type of innovation is crucial for businesses to stay competitive and appealing.

RPA has also been recognized in the field of health care services as the largest employer in the Europe, the UK's National Health Service (NHS), started using RPA technology in 2020 to plan the care of Covid-19 patients. It ended up creating an automation that produced accurate results more frequently than a human would. This also allowed the hospital to repurpose over 1500 hours of staff work time over the course of the year. (Hewitt 2021.)

Adapting new technology is rarely easy, fast, or cheap for a company. This is why thoughts of acquiring a new digital tool may raise discomfort amongst the company. Therefore, a careful planning of implementation is necessary to ensure the quality of the outcome.

Intelligent automation, such as artificial intelligence (AI) and RPA have been gaining much interest in the last years amongst businesses. The global market for automation technologies, for example RPA, is expanding at a compound annual rate of growth of 40.6 per cent and it is likely to reach $25.66 billion by 2027 (Deloitte 2020, 3).

This phenomenon could be explained by the fact that by applying intelligent automation to perform repetitive tasks instead of a human reduces errors, saves time, and the work environment is made more humane. This reflects the customer experience since the quality of the services is enhanced, and the number of services a company is able to produce increases.

2   Background

2.1   Defining Robotic Process Automation, RPA

RPA is a type of software that mimics the activity of a human in carrying out a task within a process. It can do repetitive tasks more quickly and accurately than humans without getting tired, freeing them to do other matters requiring humane strengths such as emotional intelligence, reasoning, judgment, and interaction with the customer. (Willcocks 2017.)

The way a robot operates is quite close to how an actual human worker would complete the task in a sense that it uses the same databases and programs as a human would. To operate the robot requires a configuration of what it is supposed to do, when it is supposed to do it and how it is supposed to perform the given task.

2.2   Benefits of RPA

In the past few years, we have seen organizations embrace digital ways of working, and many have incorporated robotics and artificial intelligence as a part of their transformation journey. Implementing a wider range of technologies allows organizations to streamline their business processes, increase the number of tasks that can be automated and increase the areas of potential use. (Deloitte 2020, 5.)

The benefits of RPA have been recognized for example in the field of health care services. One of the tasks at Northampton General Hospital (NGH) was to monitor oxygen levels. Before automation this required staff to manually log into the system and physically collect a reading from two oxygen tanks every six hours, which was about to shift into more frequent checks due to the increased number of Covid-19 patients. Automation implemented in 2020 allowed NGH to

monitor the oxygen levels 24 hours a day with 100% data accuracy without human intervention. This enabled the hospital to repurpose over 1500 hours of staff time over the course of the year. (Hewitt 2021, 11.)

Applying robotic process automation to a company that handles large masses of data and numerous repetitive tasks can save a lot of time. The saved time can be redirected into more creative activities for example personnel development. Assigning tasks suitable for a robot also cuts down the margin for errors or mistakes since the robot operates every single time in a predetermined way to produce a desired outcome. For human workers there is always the chance for human errors occurring especially when repeating a simple task continuously.

Automation should be thought of as an additional team member. These additional team members do not only mimic exactly what a human does on their computer but also runs for twenty-four hours a day, any day of the week, and on most occasions finishes the task faster with fewer errors. One should think of automations like additional team members, here to support an existing team. (Hewitt 2021.)

The fact that the robot can be configured to perform certain tasks at a given time or from a human worker's signal plays a significant role in its usefulness. For example, processes that require gathering data from multiple databases and combining it into one readable accurate presentation is potentially better performed by a robot. This type of process is most efficiently started after the human workers have finished their workday so when they start again in the morning, the presentation is ready to be inspected. This keeps the company's operations running almost around the clock and makes the work more efficient.

2.3   The Popularity of RPA

In 2020 Deloitte conducted a global-scale survey about the popularity of intelligent automation solutions amongst companies. The survey was answered by 441 executives from 29 different countries and from a wide scale of different industries. (Deloitte Insights 2020.) This survey provides valuable data concerning the wide range of usability that RPA offers since the results are multinational and from different fields of business.

The results revealed that 78% of the companies surveyed had already implemented RPA in their businesses. Sixteen percent had plans to do so in the next three years, and only 6% had no plans to implement it. For comparison the same percentages for artificial intelligence (AI) were much lower; 34% had implemented, 51% were planning to implement in the next three years and 14% did not have plans to implement. (Deloitte 2020, 5.)

Even though the majority of the participants had already implemented RPA, it still seems that the demand for automation technologies is only rising in the future. RPA could be described as an easily accessible automation.

The global market for automation technologies, such as Robotic Process Automation (RPA), is expanding at a compound annual rate of growth of 40.6% a year and is likely to reach $25.66 billion by 2027 (Deloitte 2020, 3).

2.4   Palkeet as a Company

The Finnish Government's Shared Service Center for Finance and HR (Palkeet) is a provider of group services in the administrative branch of the Ministry of Finance (Palkeet 2022).

Palkeet's staff consists of about 650 professionals who provide finance and HR services to their customers. The customer base mostly consists of government owned agencies, but they also serve state-owned businesses and fully state-owned limited companies that provide services for the Finnish Government.

The services that Palkeet offers to its customers, especially those salary and HR related, contain a large amount of repetitive and process-based tasks. Therefore, in 2015 Palkeet started a preliminary investigation into whether robotic process automation could be used to streamline and simplify their work tasks.

2.4.1 The Need for RPA at Palkeet

The current services center model of Palkeet was adopted in the early 2000s as a response to the need to streamline government finance and HR management. The reason to transform into this model was to centralize and produce services with constant and equal quality. (Palkeet 2022.)

Because the company in question is a process-based organization the RPA was recognized as a possible solution to reduce manual labor and decrease repetitiveness. Every day Palkeet as a service provider handles large quantities of old and new information related to financial services and HR. This type of information could be tax cards or for example decisions concerning various social benefits. This information is being saved and processed in multiple different systems and databases. For a human worker, gathering data from these databases for processing is time consuming and repetitive and is one of the reasons why the need for automation was recognized.

The services that Palkeet provides can roughly be placed in two categories: Financial services and human resource services. Both of these two categories benefit from RPA greatly since the processes behind the produced services are in one way or another digitalized. The production of financial and human resource services naturally contains a large amount of data and keeping up with calculations and paid amounts for long periods of time.

However, the HR-side of the services has various customer service-oriented tasks therefore saving time in repetitive tasks with automation helps enhancing the customer experience since more work hours can be allocated for the customer service and communication.

3   The Implementation of RPA

3.1   Assembly of International Guidelines

The process of implementation can be shared into four parts according to Wewerka and Reicher (2021, 53). These parts are:

1. Evaluation
2. Preparation
3. Implementation
4. maintenance.

Even though there are only four parts in this process they all hold a considerable amount of content in them. Therefore, when the implementation is executed with the necessary planning it involves, it presumably takes months or even years to implement RPA that is ready to use.

Evaluation:	The end-users can always see the status of their task. How did you design this guideline?

Evaluation:
- Examine the proposed process:
  - The process will not change in the near future.
  - The process is rule-based.
  - The process is highly manual and repetitive.
  - The process has digital input and output.
  - The process does not have a lot of variants.
  - The process is well analyzed and documented.
  - The process saves 0.5 Full Time Equivalents (FTE).
- Does your management support the implementation of the RPA bot?

Preparation:
- Have you talked to the end-users and have you understood their expectations?
- Have you considered the following guidelines for a user-friendly design of the bot?
  - In case of an error, the bot provides an understandable error message that helps the end-users to fix the error.
  - In case of an error, the end-users can easily correct the mistake by themselves.

- The end-users can always see the status of their task. How did you design this guideline?
- The end-user's attention is attained if bot finishes or fails. How did you design this guideline?

Implementation:
- Does the bot work reliable?
- Does the bot produce results within a reasonable response time?
- Is the bot trustworthy?
- Have you documented the implementation in detail?
- Can the RPA bot be used without additional efforts?

Maintenance:
- Have you offered training sessions for the end-users?
- Have you provided user manuals for them?
- Have you established RPA opinion multipliers, i.e., colleagues advertising the RPA bot?
- Have you demonstrated the advantages of RPA?

Figure 1. Checklist-based Support of Knowledge Workers in Robotic Process Automation Projects (Wewerka and Reicher 2021).

3.1.1 Evaluation

The first step of implementation is to be determined if automation is the suitable solution for a company's needs. To evaluate this, the processes that the company would want to be automated must be examined to determine whether automation is a cost efficient and a sustainable solution in the long term. RPA is not a universal tool for every situation, and there are specific criteria (Figure 1) that the process in question must meet for the robot to be capable of producing a desired outcome.

The process must be rule based for the robot to be configured to operate accurately. This type of process could be for example producing a monthly list of the employees whose contracts are ending within two weeks. The robot must have a digital input and output in order for it to be able to acquire the required data and reproduce it into the desired form.

The process should also be well documented and analyzed to ensure an effectual automation. For the process to be effective the robot needs the information to be sufficient and clear, and a procedure in case of errors should be included.

For the sake of profitability, the process should be highly manual and repetitive for it to generate value. It is also desirable that the process itself is not going to change in the near future since then the process should then be evaluated again or the robot should at least be reconfigured.

3.1.2 Preparation

After the evaluation is concluded and if the process is defined as suitable for automation, the planning and visualizing of what the process should be like after the automation begins. This includes going through the factors that were mentioned in the evaluation phase. The preparation stage defines the to-be process that shall be executed by the bot. (Wewerka and Reicher 2021.) Preparation according to Figure 1 also covers the common understanding between robot development and end users of what the expectations for the robots are.

The personnel that are going to share work tasks with the robot should be educated about what the robot is doing and in what timetable. An overview picture should be clear to the personnel about the robot's function and possible errors. In the case of an error, which part of the process caused it should be made very clear.

People developing the robot should communicate with the end-users so the expectations about robots' capabilities are clear. Also, by communicating it can be ensured that the robot is user-friendly and meets the exact needs of the end users. The supplier of the robot should be involved in negotiations regarding what the procedure is in case of an error or the dysfunction of a robot.

3.1.3 Implementation

The implementation stage includes the development of the RPA bot according to the design in the previous stage (Wewerka and Reicher 2021).

This stage includes the first actual uses of the robot, and the objective is to see if the results are as desired and if the robot is having troubles of dysfunctions in some areas.

When the robot is deployed the first time for a certain task, it is important to document the process and if the outcome is what was expected.

3.1.4 Maintenance

When the robot is operational and working as intended begins the maintenance phase. In the maintenance phase the performance of the robot should also be monitored and analyzed if there is room for improvement. The knowledge about the robot and its way of operation should also be shared inside the company so that the people are aware of the possibilities of RPA in case of further automatization over processes in the future.

3.2 A Checklist for Implementing RPA

Deloitte is one of the leading companies in the field of service providing for companies as they offer their expertise and consultation about digital services for their customers (Deloitte 2022).

In 2016 Deloitte conducted a survey concerning businesses that have implemented or are planning to implement RPA in their company. The survey was answered by 143 leaders around the globe from the fields of global business services (GBS) and shared services. (Lawson 2016, 4.)

From this research they gathered a checklist of key points of what a company should at least do when planning and implementing RPA.

1. Invest in comprehensive stakeholder management

2. Select the right process or activity

3. Do not automate broken processes

4. Invest heavily in exceptions management

5. Conduct robust testing

6. Monitor the quality of the outputs

7. Agree up front approach to measuring and tracking benefits

8. Ensure adequate education and user adoption

9. Ensure vendor and implementation partner business vision alignment

Figure 2. Checklist for RPA implementation (Lawson 2016, 11).

The first point on Lawson's list (Figure 2) is about investing in the stakeholder management which prepares all parties that are needed in the implementation process. This could mean preliminary education about the subject itself and making sure that the management especially is onboard.

The selection of processes is without a doubt a necessity since the goal of this process is to simplify and improve productivity of processes. As stated by Lawson (2016) a broken process should not be automated since any unpredictable errors make the usage of the robot much more inefficient and onerous.

Management of exceptions is as important as the implementation itself, since if there is inadequate preparation for the robot operating in a different way than expected and it is not generating the wanted results, the robot may in a worst-case scenario be worthless at that state. Therefore, a broad inspection and documentation of potential errors should be carried out so they may be avoided before they occur.

Robust testing is also noted on the to-do-list which covers the test runs before an actual deployment of the robot. This way the most common malfunctions will be noticed and responded accordingly. This phase also offers an opportunity for improvements and polishing before deploying the robot to the field. During and after the testing it is also highly recommended to monitor the quality of the output the robot is producing. Is the output what was expected, is it in a proper form and is the output produced within the expected time?

Before the robot starts working it is sensible to develop an approach to measure how beneficial the robot is. This could be measured for example by the improvement in quality, saved work hours or a decrease in mistakes.

Making sure that the people who will be sharing their work with the robot are provided with sufficient education about the robot is crucial. If the personnel do not have an understanding of how and when the robot operates, it will cause confusion, dissatisfaction, and distrust towards the robot. To maximize the potential use of this technology a sufficient understanding is necessary.

The last point on Lawson's (2016) list is the common understanding between the provider of this software and the implementation partner. In the selection of a provider, it is most beneficial for both parties if the sights of the future align with both parties concerning even the time after the implementation process. (Lawson 2016, 11.)

If compared, the checklist (Figure 2) provided by Lawson (2016) contains similarities to Wewerka and Reicher's (2021) guideline (Figure 1) but in a more compact form.

Lawson's step-by-step approach is more about the practical implementation process itself and it does not go too deeply into the details of the steps. Lawson's checklist functions as a base structure model for the implementation process but does not serve independently as a guide.

4 Methodology

4.1 Data Collection Methods

Qualitative research focuses on understanding a research query as a humanistic or idealistic approach. Qualitative method is used to understand people's beliefs, experiences, attitudes, behavior, and interactions. It generates non-numerical data. (Pathak 2013.)

This research reviews the literature on a case study as a strategic qualitative research methodology. Although case studies have been criticized by some authors as lacking scientific rigor and not addressing generalizability, this research is appropriate when dealing with a process or a complicated real-life activity in great depth. Case studies have been generally used in social science fields such as sociology, industrial relations and anthropology even though it commonly has been considered an underutilized strategy. (Noor 2018.)

A semi-structured interview frequently uses some predetermined questions but is also flexible to shift through subjects depending on the answers. It is characteristic for semi-structured interview questions to start with a broad, open question and then moving more in-depth of a wanted subject depending on a participant's answers. (Holloway and Wheeler 2010.) The disadvantage of this method is that it does not produce the most reliable nor comprehensive information (Vuori 2022).

The author has chosen this method since his goal is to produce precise information regarding the process in such form that it follows and gathers the main points. With this method he was able to further expand his knowledge of the specific company in question and therefore understand more comprehensively the different stages of the implementation process.

4.2   Introduction of the Interviewee

Eija Hartikainen (2022) from the company which the case study was concluded on, Palkeet, is working in the development unit as a development executive. She has been part of the RPA implementation process at Palkeet since the preliminary investigation. First, she worked as a project manager leading the implementation project and later took part in creating and recruiting an automation team which works with RPA related topics still today. (Hartikainen 2022b.)

4.3   Choice of Questions

The chosen questions follow a semi-structured interview model. The objective of the questions was to gain a clear knowledge of the implementation process and if it had similarities of differentiation in comparison to the theoretical guideline. Also, possible targets for improvement were sought in order to generate more valuable results from this research. The research questions were not shared beforehand to get the most authentic results.

4.4   Validity, Reliability, and Ethicality of the Data

A single subject interview is a great way to get focused, pragmatic, and detailed knowledge (Vuori 2022). The reliability of the interviewee is justified by her experience gained by working nearly 10 years in the field of development and automation. During this time the interviewee has had multiple different positions within the case company and the work has been conducted in different teams depending on the position. The most validating factor in the eyes of the author is the interviewees experience of leading an RPA implementation project.

The interview was scheduled in advance, and the interviewee was informed that the purpose of this interview is to gain information which is being compared to a theoretical model of implementation. This creates validity and reliability for the interview results because the interviewee was informed about the subject of the

interview. This gave her time to consider the topic hence making her answers more thought out and accurate. The author trusts that the results could be reflected to similar cases.

The author himself has worked at the company in question as an intern, a part-time worker and as a full-time fixed term worker within a time span of two years. During this time, he worked in two different teams or service groups. Each service group has its own individual clients with individual needs and services that are provided for them. RPA was used for every client to produce the service. This provides valuable empirical experience about the research topic. During his time working at Palkeet, the author learned about how the robots work, what they do and when. He has also seen the results that the robot produces. The author considers that this validates the reliability of the research and his statements on the topic.

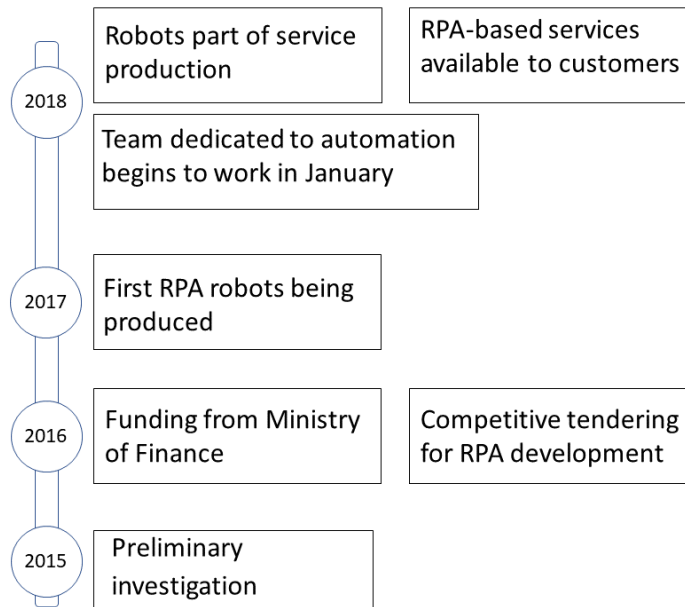# 5   Research

5.1   Palkeet's Implementation Interview

Figure 3. Experiences with RPA (Hartikainen 2022a.)

5.1.1 Question 1: The Implementation Process

''Could you describe the implementation process from the time that you were part of it?''

In 2015 RPA was noticed as a new and interesting technology, and the question rose if it could be beneficial and useful for Palkeet. A short while later, a preliminary investigation was started. A sub-contractor delivered information about what could be done with RPA, what is currently being done with RPA, what kinds of tools it requires and how the implementation process would begin.

Swift research was done during the preliminary investigation about possible uses of RPA and automatable processes. One of the helpful factors concerning the recognition of these processes was that Palkeet is a process-based organization.

This means that the services are produced with a certain process pattern which is documented clearly. Over 60 target processes for automatization were discovered in less than a day during this research.

Processes were prioritized to see what the most beneficial starting points could be.

Funding was sought from the Ministry of Finance, and a so called ''Digi-fund'' was granted. This was especially meant to be used for the development and enhancement of new technologies. The funding was granted for the implementation project and the acquisition of RPA tools by the Ministry of Finance.

The acquisition was started in 2016, and an invitation to tender was started to determine the supplier. The deal that Palkeet was looking for included the RPA as a tool and continuous service concerning the implementation and development of the robots from the supplier.

There were quite a lot of demands. Since working on government administration and processing personal information, a cloud-based data solution was not an option because of data security. The robot's environment should be installed on the government's own servers. There was also a policy put in place from the beginning that the RPA knowledge should be internalized within Palkeet. This is why one of the demands was that the supplier must send two RPA experts to work in Palkeet's main office in Joensuu, Finland for the duration of the initial implementation, approximately for six months.

There was also a usability test required during the selection of the provider, where the suppliers demonstrated that the products they are offering are compatible with the systems Palkeet are using and the processes that Palkeet wished to automate. After this was conducted, the supplier was selected.

The first robot that was created with the supplier was programmed to process purchasing invoices. Another robot that was taken into use early on was a robot

designed to examine and inspect if the data is transferring accurately between the two different systems. This robot was described more as a quality controller robot than an actual process enhancing robot.

This robot was used for half a year, and after that it was taken out of use since the quality of the data transferred between systems seemed to be invariable and correct. This part of the implementation project took place from the fall of 2016 until the end of 2017.

When the work with the supplier had started, there was a recruitment process inside Palkeet which was held to find people interested in RPA. The selected group were taught about RPA and how to code in order to maintain and develop the robots in the future directly at Palkeet. In the beginning of 2018, a small team dedicated to automatization started operating.

From 2018 until 2022 the automation team has grown as the usability of the RPA has been expanding and new objects of use have been discovered. Some of the members of the automation team have been selected and trained from inside the company, but there have also been open recruitments.

Nowadays, more and more automations are being implemented within the company, to streamline services, enhance the quality of work and overall to produce a better customer experience.

Customers are also offered additional automation solutions which they may choose depending on their own priorities and needs.

5.1.2 Question 2: The Challenges in the Process

''What were the biggest challenges in this project if there were any?''

A resistance to change was present during the process. The first robot to be deployed to work, which was processing purchase invoices, received a negative welcome in the beginning. The purchase invoices had been previously processed manually with an accuracy that can be expected when putting a human to work with large quantities of data. Not nearly as accurately as the robot would operate. People in the service groups that were responsible for those purchasing invoices were not happy working with the robot as the robot processed the invoices and produced a document afterwards which indicated if there was false or missing information within a certain invoice.

This led to a situation where some of the service groups ignored the robot and preferred to continue processing the invoices manually as they didn't trust that the robot was operating correctly or that the robot's work was useful.
Nevertheless, the preparations for change persisted and the informing of the service groups was increased. Within the first year of using RPA, with the help of service groups supervisors, the personnel of the service groups started to notice the benefits of the robots and began to understand how much RPA saves time in routine tasks. After this the personnel started to inquire and anticipate if there would be new robots helping with the workload to be implemented.

Currently Palkeet has automatized over a hundred in-house processes and for customers there are over forty automatizations running on a regular basis. On average there are monthly over five hundred processes being completed using RPA.

5.1.3 Question 3: Room for Improvement

''If you were to do this type of project again, what would you do differently?''

More time could have been spent on the educating the personnel working with the robot. Also, more time could have been spent on the training of the automation team to make the step of defining the process more efficient. This step is executed in cooperation with all the parties involved in the production process. Since the way the robot's program is defined and what it is purposed to do has an extensive impact on its production, implementation, and deployment, the definition part should be as accurate and efficient as possible.

It would be great if all or at least most of the exceptions in the functioning of the robot could be taken into account beforehand. Naturally, issues like these only become apparent after going through the process and gaining experience. This would of course improve the process.

Regarding the maintenance tools, it would have been better if the suppliers would have had a better selection of maintenance tool options available, but unfortunately, they do not exist at the moment. To answer this need, Palkeet has started producing their own monitoring tools to keep a clear track of the robot's processes.

6   Results

6.1   The Results of the First Question

> ''A sub-contractor delivered information about what could be done with RPA. What is currently being done with RPA, what kinds of tools does it require, and how would the implementation process begin?'' (Hartikainen 2022b).

Palkeet's implementation process began with a preliminary investigation. This was necessary since the technology was rather new and there were not many case studies nor was there sufficient preliminary information available to use. This created an open canvas which enabled the development team to start planning the possible uses for RPA and to seek the automatable processes.

> ''Over sixty target processes for automatization were discovered in less than a day...'' (Hartikainen 2022b).

Because Palkeet is a process-based organization it was quite easy to discover which tasks that could be automated. A preliminary priority list of these processes had to be done to determine which ones would be the most beneficial targets for automation in a sense of productivity and concerning the implementation process. Since it was known that the first robots will serve as a test subject for the future, the area of operation was chosen in moderation.

Compared to theoretical implementation models (Figures 1 and 2) this covers most of Figure 1's evaluation phase concerning the examination of the target processes. In Figure 2 it is also mentioned to choose the processes carefully.

> ''The funding was granted for the implementation project and the acquisition of RPA tools by the Ministry of Finance'' (Hartikainen 2022b).

When considering a government organization, the approval and funding from the management is something that solely decides if a project is going to take place. In this case the support from the management was undeniable, since the preliminary investigation had been done thoroughly and the benefits of the projects were clear. The fact that there was separate funding available towards new digital solutions justified this project even more.

The author sees that this covers the just mentioned point from the evaluation phase in the theoretical guidelines (Figure 1), which is about support of management towards the implementation project. The theoretical checklist (Figure 2) also mentions the importance of comprehensive stakeholder management. The funding from management indicates that they are onboard with the project.

> ''The deal that Palkeet was looking for included the RPA as a tool and continuous service concerning the implementation and development of the robots from the supplier […] There were quite a lot of demands'' (Hartikainen 2022b).

The supplier was chosen carefully, since Palkeet had a vision for the future with this technology, and this vision required multiple things to fall in place. The methods of implementation varied between different suppliers, and this also made a difference. Palkeet's most important subjects concerning the implementation were security, permanence, and functionality. As Palkeet processes personal information the environment of the robot had to be built within the government's own databases and servers, cloud technology was not an option for security reasons. Palkeet also wanted to maintain and enhance the knowledge about RPA inside the company, something which offered its own challenges concerning the supplier.

Ensuring the vision alignment of the vendor and implementation partner is one of the points on the theoretical checklist (Figure 2). This is a process that Palkeet carried out when choosing the supplier. It is a valid solution, in the author's opinion. Palkeet asked for offers. Multiple suppliers took part in the competitive tendering. During this phase the terms of different offers were discussed. and based on these negotiations the most suitable supplier was picked.

> ''The first robot that was created with the supplier was programmed to process purchasing invoices. Another robot that was taken into use early was a robot designed to examine and inspect if the data is moving correctly between two different systems.'' (Hartikainen 2022b.)

This enabled robust testing of how the robot managed to operate between different systems that were already in use at Palkeet. This was crucial, since the processes that were to be automated contained transferring, copying, and adding data to and between multiple different systems.

When these first robots were put to the field it provided an opportunity to see if there were any unexpected errors and if so, how to respond to them.

This type of benchmarking also supports the theory in Figures 1 and 2 regarding robust testing.

> ''there was a recruitment process inside Palkeet which was held
>
> to find people interested in RPA'' (Hartikainen 2022b).

After the supplier was selected and the development of the first robots was started, Palkeet began to seek people inside the company that were interested in learning about automation and working with it.

The first reason for this was that the amount of manual work would decrease with the robots present and therefore not as many people would be needed to complete them. The second reason was that Palkeet wanted to become as self-

sufficient with the automation as possible. This required to assemble a team dedicated to only working with issues concerning automation.

In contrast to the theoretical models, the author sees this part fitting to the pre-maintenance phase.

6.2   The Results of the Second Question

''A resistance to change was present during the process.'' (Hartikainen 2022b).

Before the robot began to process purchasing invoices they were processed manually by a human. When the tasks were done manually there was a certain ''mistakes happen, and it is okay''-mindset present. This is only natural when a human keeps repeating the same tasks for a long time.

However, when the robot began to work with the purchasing invoices it produced a report stating a problem. Every time there was an invoice that the robot could not process due to missing or false information. This led to a situation where employees insisted on continuing processing the invoices manually, since they would in any case process the problematic ones from the robot's report.

When connecting this phenomenon to the theoretical models, the author sees this as a lack of communication or insufficient end-user engagement. The employees did not find it beneficial to utilize the work the robot was doing. Another reason for why it was challenging at first might have been because the staff were reluctant to evolve their ways of working. Most of the staff at Palkeet represent the older generations. They have been working in a certain way for decades and they are not as familiar with the new technologies. They might be wary of them because of that.

> "Within the first year of using RPA, with the help of service
> groups supervisors, the personnel of the service groups started
> to notice the benefits of the robots" (Hartikainen 2022b.)

After the initial unwelcoming reaction that automation received at Palkeet, the management increased briefing about the advantages of automation and why it has been taken into use. The service group's supervisors were also recommended to encourage the personnel about utilizing the work of the robot. In under a year the staff started to realize how much manual labor the automation saves them from. According to Hartikainen (2022b) after a while the staff began asking about the situation of the new robots and if a certain task could also be automated in the future.

The importance of end-user engagement and education was listed on both of the theoretical models, and these results demonstrate their importance. The author sees that Palkeet effectively managed the situation. The outcome was what was sought, and personnel were given a timeframe to adjust and see the benefits themselves rather than being forced to.

> " […] The personnel started to inquire and anticipate if there
> would be new robots helping with the workload to be
> implemented"(Hartikainen 2022b).

This could be seen as a positive reaction in a sense that after the initial challenges the personnel became more interested in automation. This increased the creativity at the workplace. The staff from the service groups began to think of new tasks to automate since this would create variety in their workload by decreasing the number of manual tasks. The company also benefits from this, because discovering new processes to automate is naturally easier for people who work with them daily. This saves time that would be used to examine and discover these potential processes for automation. Another benefit for the company is that as the robot takes more of the manual work from the human personnel, they can redirect their time towards more demanding duties that robots cannot do. This allows the company to offer a wider range of services quantity- and quality wise.

'' On average there are monthly over five hundred processes being completed using RPA '' (Hartikainen 2022b).

Even though there were challenges during the launch of the first robots, Palkeet managed to control the situation and develop the automation services. Compared to the initial launch of two robots in 2018, the company has taken a great leap with automation. In 2022 they had over 100 in-house processes and 40 customer processes automated.

The author sees that the RPA has offered significant value for Palkeet and its customers in the form of enhanced quality of work, increased productivity, and improved working conditions. Ever since Palkeet started to automate processes using RPA, the quality of work has increased. This is a direct benefit for both the customers and Palkeet. The amount of work that Palkeet can complete in a certain time frame has also increased due to the robots, as they can work around the clock. The manual work tasks being shifted from humans to robots can also be seen as an improvement for human personnel, since this leaves more time for more creative tasks.

6.3   The Results of the Third Question

''More time could have been spent on the education of the personnel who are going to be working with the robot'' (Hartikainen 2022b).

Hartikainen (2022b) acknowledges that the instruction of the end-users could have been more comprehensive and states that if she was to do this type of project again it would be a subject for improvement. The other thing she would change in the implementation process would be to do more to educate the automation team created for managing the maintenance and defining the processes of the first robots in cooperation with the supplier. She sees that the definition process of the robot could have been more efficient and quality-wise

better, as the way the robot is defined initially has an impact on all the following phases of the implementation process.

> '' […] but naturally, issues like these only become apparent after going through the process and gaining experience'' (Hartikainen 2022b).

The implementation of new systems or technologies is never simple, and there are always some challenges within the process. Considering that RPA was at the time of Palkeet's implementation a quite new and rare technology in Finland the project was well executed. The author sees that the obstacles that Palkeet faced during the project were managed properly and the result was adequate.

All parts of the implementation process at Palkeet could be distributed inside the theoretical models (Figures 1 and 2), and every point from the theoretical models can be pointed out from Palkeet's process. The author thinks that this validates the use of these theoretical models to be utilized in equivalent cases.

6.4   RPA's Effects on Personnel

In all of the examined cases, people welcomed the automation with open arms since they hated the tasks that the machines now do, and it relieved them of the rising pressure of work (Willcocks 2017).

Even though one might think that applying an RPA into a company's work environment would decrease the number of jobs the company is offering, this was not the case for Palkeet. Hartikainen (2022b) was leading the implementation project at Palkeet. According to her, there was no need to let any of the employees go because of the automation. However, the structure of the operational teams changed naturally.

Since a large portion of repetitive tasks and tasks concerning handling great amounts of data were given to a robot to process it saved human workers time.

Because of this it was possible to assign the employees to different positions and more creative tasks. For example, completely new teams were created inside the organization, for example an automation team.

The tasks that can be done using a robot are simple, repetitive, and mass oriented. Instead of replacing a human worker completely, a robot is more likely to free some time off from the employee's workday. This freed time may then be used for more productive activities and work tasks including personnel development.

7   Conclusions

The author chose the theoretical models, which Palkeet's implementation process was reflected to, for his research to determine the validity of these models and can they be utilized in practice.

The interview results indicate that the theoretical models of implementation (Figures 1 and 2) could be used as valid guidance when implementing RPA for a comparable company. This research examined only Palkeet's project and therefore does not guarantee a universal usability for these models. However, the author is confident that this type of implementation model would work for companies with similar characteristics. The reason for this is that Palkeet's implementation process followed the theoretical models. Even though they encountered some challenges, the end result was successful.

However, every company that plans to implement RPA technology should be considered and researched as an individual case in order to achieve the most accurate results and to guarantee an efficient project.

When applied, RPA brings extensive change to work routines, and therefore the RPA's effect on personnel could be studied more in-depth in the future. This kind

of study would be a useful tool to indicate the most common issues that arise within the personnel and what would be the best ways to address them.

The results of this study show that automation brings a variety of benefits to a company and its employees. This includes an increase in productivity: time saved by automation can be allocated to product and service development. The decrease in the number of manual tasks creates a more creative work environment and can encourage employees to be more innovative.

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