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Robotic Process Automation Tools (RPA) As an Alternative Tool Selection Matrix for Automating Robotic Operations

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Abstract

Robotic process automation (RPA) is a software that automates repetitive operations in various applications, such as collecting forms, sending receipts, checking for completion, and adding data to spreadsheets. This thesis project aims to increase efficiency, productivity, and lower business expenses by automating tedious processes within an organization. Using process visualization diagrams, the accounting department was able to narrow down its business's general demands into development specifications. After final validation through test cases, it was decided that an automated manual method would be the best course of action. The research compared several RPA systems, identified the optimal manual approach, and delves deeper into RPA. The findings showed an improvement in performance over the last 18 months, with the number of RPAs increasing due to more personnel saving time. The efficient integration of RPAs into operational processes could lead to this improvement. The combination of RPA and manual methods was well-suited to each other, and additional benefits could exist if the automation team maintains production and adoption rate. RPA speeds up both the organization's processing time and employees' ability to focus on value-added tasks.

Keywords: Audit automation, robotic process automation, robots and bots

Introduction

Robotic process automation, an emerging academic discipline, aims to program computers to carry out routine tasks in a way that is consistent with human performance. Enterprises are aiming to decrease labor costs, boost productivity, decrease mistake rates, and improve customer satisfaction by transitioning to RPA. In response to the rising cost of labor on a global scale, businesses have been quick to adopt RPA technology in recent years. The United States Nonfarm Unit Labour Cost (2018) and The Biggest Cost of Doing Business: A Closer Look at Labour Costs (2018) are references to the same work. Software that automates routine tasks is now a hot technology in a lot of different sectors. Here we'll take a look at RPA technology and its basics, as well as several of the societal effects it

might have. Robotic process automation, in its broadest sense, allows for the automation of business processes via the use of user inputs and business logic.

Applications that facilitate robotic process automation (RPA) allow users to design bots that have the ability to mimic human behaviour in areas such as transaction execution, data manipulation, response triggering, and interaction with other digital systems. At the turn of the hundred analysis estimates that RPA and other forms of automation may have a \$6.7 trillion effect on the global economy by 2025. This same research also predicts that the automation sector will outperform the mobile Internet in terms of economic effect. A recent poll of 500 senior decision makers found that as many as 77% are of the opinion that RPA would boost productivity by automating routine, transactional jobs.

Similarly, 56% of those who took the study want to utilize Robotic process automation can allow workers to focus on higher-value activities. (No date provided; what exactly is RPA?) These numbers suggest that RPA has the potential to become a performance standard and a top technical platform. Although technology like A term that has been used to describe the long-term development of computer vision and workflow automation is RPA is attributed to the mid-2000s. Robotic process automation (RPA) is just starting off on its journey to maturity, but it builds upon and improves upon existing technologies such as screen scraping, workflow automation, and artificial intelligence (AI). Robot process automation (RPA) software allows users to scrape screens without using coding visually construct processes without knowing how to code at all. Additionally, some Optic character recognition (OCR) technology is used by RPA software to automatically adapt to dynamic webpages, unlike many online scraping applications. According to Deloitte, RPA connects artificial intelligence with automation: "RPA, which is short for artificial intelligence, is the use of technology that enables workers in an organization to program a computer program or a "robot" to do tasks such as reasoning, gathering and extracting information, identifying patterns, learning, and adapting to different settings." (Patrick Laurent; Thibault Chollet; Elsa Herzberg, 2018) Furthermore, sophisticated skills can arise with RPA and AI working together. Determining and managing exception instances are still heavily dependent on human intervention, despite automation's primary goal of organizing and reorganizing rule-based and repetitive procedures.

Literature Review

Choi, Daehyoun *et al.* (2021) ^[1]. Automating repetitive, predictable, high-volume, rule-based, and demotivating human jobs is now possible via the use of cutting-edge technology known as robotic process automation (RPA). Robotic process automation (RPA) is based on the premise that mundane tasks once performed by people may be done more efficiently by digital workers or virtual workforces. This allows humans to focus on solving problems and doing more complicated tasks. When it comes to automating certain business processes, RPA solutions are thought of as both easy to use and quite effective. Implementing RPA isn't without its difficulties, however, since this technology has only just begun to take shape. An introduction to RPA and its difficulties are given in this article.

Zhang, Chanyuan *et al.* (2022) ^[2]. The consequences of RPA adoption, including its advantages and disadvantages might be comparable to those of previous IT projects, but it could also bring about some novel characteristics. The field of accounting and new technology have both benefited from our study by documenting the whole procedure for implementing RPA in an accounting department. For this, we rely on a RPA system at an accounting firm as the foundation for our exploratory and case-centered research approach. As an example of an early-stage RPA, we contrast it with another case study installation and interview subject-matter experts to further validate it. Management of information technology, data protection, long-term viability of systems, and evaluation of robotic process automation are the five topics we find in relation to RPA implementation in

accounting operations. Also included are some important points to remember that can help with RPA implementation in accounting. Academics and practitioners alike may benefit from our study's findings about the impacts of RPA deployment.

Arnaz, Ricky *et al.* (2021) ^[3]. With a huge staff, assets, and intricate business procedures, PT X dominates a significant sector of the Indonesian manufacturing industry. In an effort to streamline and improve operational operations, PT X has chosen to launch a Robotic Process Automation (RPA) program. Were the claims that RPA benefited PT X after its implementation accurate? This article analyses the pros and cons of RPA at PT X, including the company's deployment, impacts, and results. Applying cost-benefit analysis grounded on qualitative and quantitative methods, the study zeroed in on the integration of RPA into PT X's vendor payment process. Interviews with internal and external PT X stakeholders who had a significant role in the RPA implementation provided the qualitative data used in the study. Financial accounting and business process analysis are the tools used to carry out the quantitative approach. By reducing the employee cost by up to 55% With a 97.8 percent reduction in the time it takes to pay vendors, this research concludes that RPA deployment has favourable impacts.

Siderska, Julia. (2021) ^[4]. The first CAWI study in Poland aimed to identify the technological elements of Robotic Process Automation (RPA) technology and the factors and obstacles affecting its adoption during the COVID-19 pandemic. The study found that nearly 60% of respondents believed robotization technologies helped keep corporate operations running during the pandemic. The most highly regarded aspects of RPA technology were those that directly addressed its practicality. However, nonoptimized, no standardized, and non-digitized processes were the most often cited obstacles to technology deployment. This study contributes to our understanding of process automation and has real-world consequences for those making decisions about using RPA. The findings may help managers make more informed decisions about implementing software robots and encourage or discourage businesses from using software robots.

Ale, Narendar Kumar. (2022) ^[5]. By automating routine and rule-based procedures, by automating once manual tasks, RPA is revolutionizing company operations and costs, increasing efficiency, and decreasing the likelihood of human mistake. This article delves into the many approaches employed in RPA, investigates the obstacles to its deployment, and talks about the potential for this technology to improve corporate operations in the future.

Research Methodology

Research Design: Kothari states it is the study design's job to lay out the big picture for how the research will be conducted, including how measurements will be taken and analysed. To get the most out of the least amount of effort, time, and resources while collecting the most data possible, research efficiency is achieved via well-designed research activities. Quantitative research relies on the measurement of quantities or amounts. The study will use quantitative research methods and primary data acquired from the case firm.

Sampling Frame and Sample Size

A complete inventory of all potential members makes up the sample frame of the population that researchers may use to choose their samples. Calculating the minimum amount of data needed to draw meaningful conclusions from a population is the primary goal of sample size analysis. All members of the population would have their data collected and analysed. There would be no sampling.

Data Analysis

Automating Robotic Processes

The fundamental premise of the research "RPA" is covered in this chapter. It covers RPA in general, as well as drivers and obstacles. Along with that, we would examine the pros and cons of RPA based on its degree of development and usage. For those unfamiliar, the following is the Institute for Robotic Process Definition of RPA Automation. According to UiPath (2021), A "robot" is a computer that workers may program to record and execute a series of predefined tasks. This technology is known as robotic process automation analyse data from existing software systems that serve to initiate reactions, handle data management, perform transactions, and connect to other computer programs.

Back when, when individuals spoke about automation, they usually meant routines that were hard-coded or API calls into software. An alternative that makes use of existing technology is RPA, or robotic process automation to mimic human actions. Robotic process automation (RPA) functions similarly to a human reading and evaluating data from a paper before transferring it to other desktop software systems. Automated procedures based on predefined rules may be automated with the use of software called robotic process automation (RPA); RPA macros are applicable across functions and applications (Deloitte 2019).

- The following are within RPA's capabilities (Deloitte 2019):
- Email and its attachments can be accessed.
- Entering credentials for online or corporate applications.
- Changing the location of folders and files.
- Transcription.
- Contents of forms.

RPA Tools

A plethora of RPA implementation tools are readily accessible. When looking for an RPA tool, it's important to know what features are must-haves for your business.

Functions that are essential to RPA tools include

- Determine the next step based on data received from other systems.
- The ability to connect with other bots or software robots and program them.
- Communicate with third-party applications by means of screen scraping and API interfaces.

Selected tools

We will have used a plethora of online resources at that point. Two sources had the most impact on the choosing process. We began with PeerSpot, where we reviewed the research on Robotic Process Automation. Actual people may talk about their experiences with various tools and

technology on this site. Figure 1 shows a graphic depiction of the second influencer, a paper titled "Magic Quadrant for Robotic Process Automation".



Fig 1: Robotic Process Automation: A Comprehensive Analysis (Gartner, 2021).

This is the basis for our selection of the four technologies that are now accessible and are the most popular, widespread, and promising.

UiPath

Popular robotic process automation (RPA) software like UiPath streamlines a wide range of manual, repetitive, and complex corporate operations. Common uses for this open-source platform include automating tasks in Windows, Citrix, PDF, and web-based applications (PeerSpot 2022f). With over a million members, UiPath has a massive community (Gartner 2021). Among UiPath's many distinguishing features are its extensive activity library, automation hub, task and process mining capabilities, and the ability to record tasks. Further features include market templates, simplified authentication, PDF capabilities, database interaction, scraping, and server-side events to launch automated operations (Gartner 2021).

Alternative Robotic Process Automation Tool Selection Matrix

The Robotic Process Automation tools that were researched are compared in table 1 which is provided in this section. To prove the tech is suitable for the business, we tally up the number of checkboxes inside our research area, in addition to the existence of criteria.

Table 1 shows the comparison and connection between four RPA solutions with eight elements. It is clear that UiPath received the most votes out of all the products, with Microsoft Power Automate coming in at number two. We used PeerSpot user reviews of these four programs to inform our comparison.

Table 1: Alternative Robotic Process Automation Tool Selection Matrix

Criteria	UiPath	Microsoft Power Automate	Blue Prism	Automation Anywhere
Technical features	✓✓	✓	✓	✓
Cost of ownership	✓✓✓*	✓✓✓✓*	✗	✗
Usability	✓✓	✓	✓	✓
Exception handling	✓	✓	✓	✓
Support	✓	✓	✓	✓
Reliability	✓	✓	✓	✓
Community	✓✓✓	✓	✓	✓✓
Longevity	✓✓✓	✓✓	✓✓	✓✓

Data

General information on the planned automation process is shown in table 2. The suggested automation method and its components are detailed in Table 2.

Table 2: General information on the planned automation process

#	Item	Description
1	Short name	Invoice handling
2	Organizational level	Finance and administration department
3	Input data	An email with a special subject
4	Output data	Filled invoice sent to be paid.
5	Period of execution	Monday, 9 am – 10 am.
6	Average manual handling time per item (AHT)	6 minutes
7	Number of items processed during a normal period	~25
8	Peak period	Randomly
9	Number of items processed during peak period	>60
10	The expected increase of volume in the future	Hard to estimate since the increase in the number of customers will lead to an unexpected rise in the volume of attendees of training sessions in the future
11	Total Full-time-equivalent (FTE)	~0,15

Applications used in the process

In Table 3, you can see an exhaustive catalogue of all the programs that are used at different points in the process that is going to be automated.

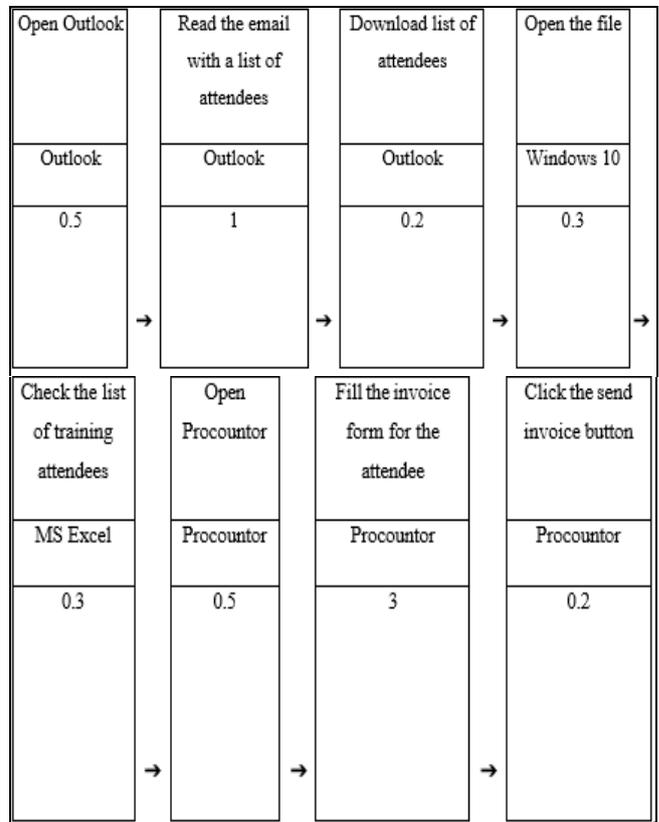
Table 3: List of applications used in the process

#	Application name	Language	Access method	Comments
1	MS Outlook	EN	Desktop application	Emails and data management
2	MS Excel	EN	Desktop application	Spreadsheet software program
3	Proccountor	FI	Desktop application	Fiscal management software

High-level AS-IS process map

To help developers get a feel for the existing process, this chapter provides a high-level representation in the current state of the company's operations. You may see a simplified, high-level diagram of the procedure in Table 4.

Table 4: AS-IS process map at a high level, with average handling time in minutes



An in-depth explanation of the method as-is

1. Process map for AS-IS

Here you may see the flowchart of the AS-IS procedure. Descriptions of data are shown in Figure 2, a pipeline diagram. In Appendix 2, you may find a bigger image of figure 2.

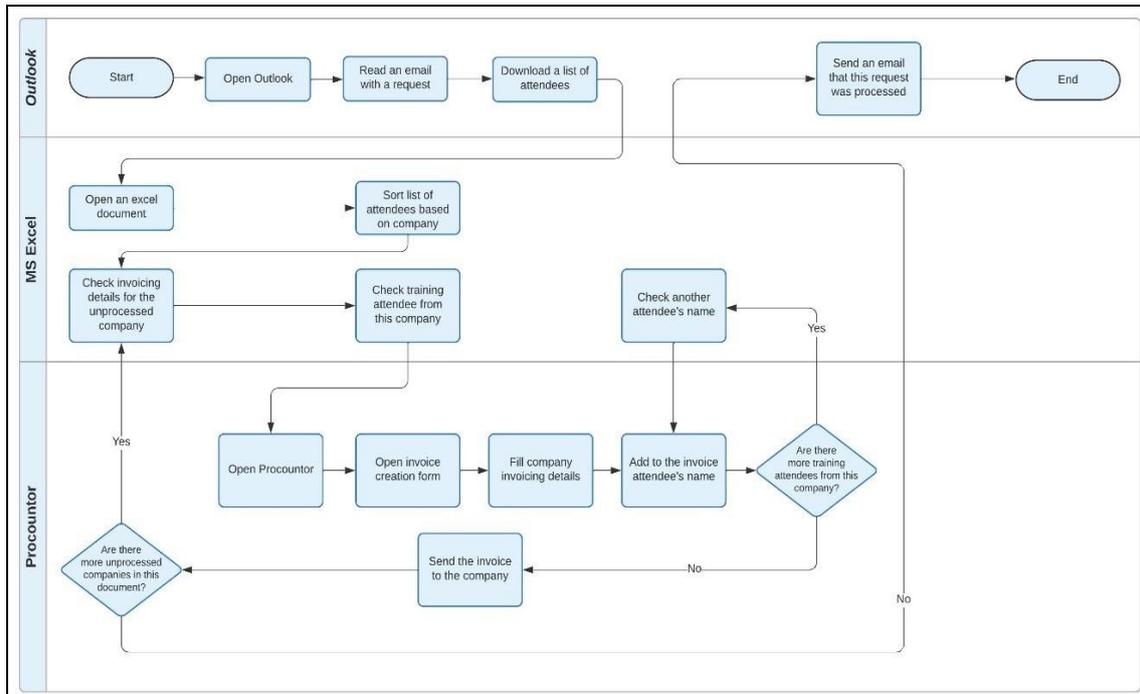


Fig 2: Detailed AS-IS process map

2. Steps in the AS-IS process

By outlining the input data, the phase, and its specifics, as

well as the output data, Table 5. outlines the steps utilised in the workflow process map.

Table 5: The AS-IS process map's numbered steps

Step	Input data	Description of the step	Output data
1	Open Outlook	The user opens Outlook desktop version	Outlook desktop version was opened
2	Read an email with a request	The user opens the email with a request to create invoices	The user has read the email
3	Download the attachment of the list of attendees	The user clicks on "Save all Attachments" button	Excel document with list of attendees was downloaded
4	Open an excel document	The user opens the downloaded document	The document was open
5	Sort list of attendees based on company	The user sorts the provided list of attendees based on company	Document was sorted based on company
6	Check invoicing details for the company	The user reads the invoicing details of the company keeps it for later usage while filling the invoice creation form	The relevant company's data was read and kept.
7	Check training attendee from this company	The user reads attendee information, like name and keeps it for adding to the invoice creation form.	The relevant attendee's data was read and kept.

8	Open Proccountor	The user opens Proccountor desktop application	Proccountor was open
10	Open invoice creation form	The user navigates to the invoice creation form	The invoice creation form was open
11	Fill company invoicing details	The user starts filling invoicing details of the company	The invoice creation form was filled with the company's invoicing details
12	Add to the filled invoice the company attendee's name	The user adds attendee's name to the filled invoice	The invoice was filled with the company's and user's details
13	Are there more training attendees from this company?	A condition that checks there are more training attendees from this company, which verifies another attendee's name and adds to the invoice as in	Condition is checked.
		Step 12; otherwise, it goes to the next step	
14	Send the invoice to the company	The user clicks on the send button for the invoice to be paid	The invoice was sent, and the creation form was closed
15	Are there more unprocessed companies in this document?	A condition that checks if there are no unprocessed companies then moves to the next step; otherwise, it goes to the step 6	Condition is checked.
16	Switch to Outlook	The user switches to Outlook desktop application	Outlook was open
17	Send an email that the request was processed	The user writes a reply email to the requestor that the invoices were sent to the companies of all attendees.	The employee received the email

Automation of the process

In this paper, you will learn how to utilise Power Automate Desktop. It explains the implementor's use of certain actions and the use cases in which those actions were employed. That chapter also provides a detailed description of the implemented flow design. The chapter concludes with the accounting clerk receiving the RPA flow. Additionally, it is the last chapter before to the end.

Power Automate Desktop: Complete building automation is now possible with Microsoft Power Automate and its Power Automate processes. An RPA solution's design process begins with the creation of desktop flows. To begin, we use the Microsoft account to access Power Automate. Choose "My flows," "Install," and "Power Automate for Desktop" after logging in, as seen in figure 3. A desktop installation package for Power Automate is downloaded.

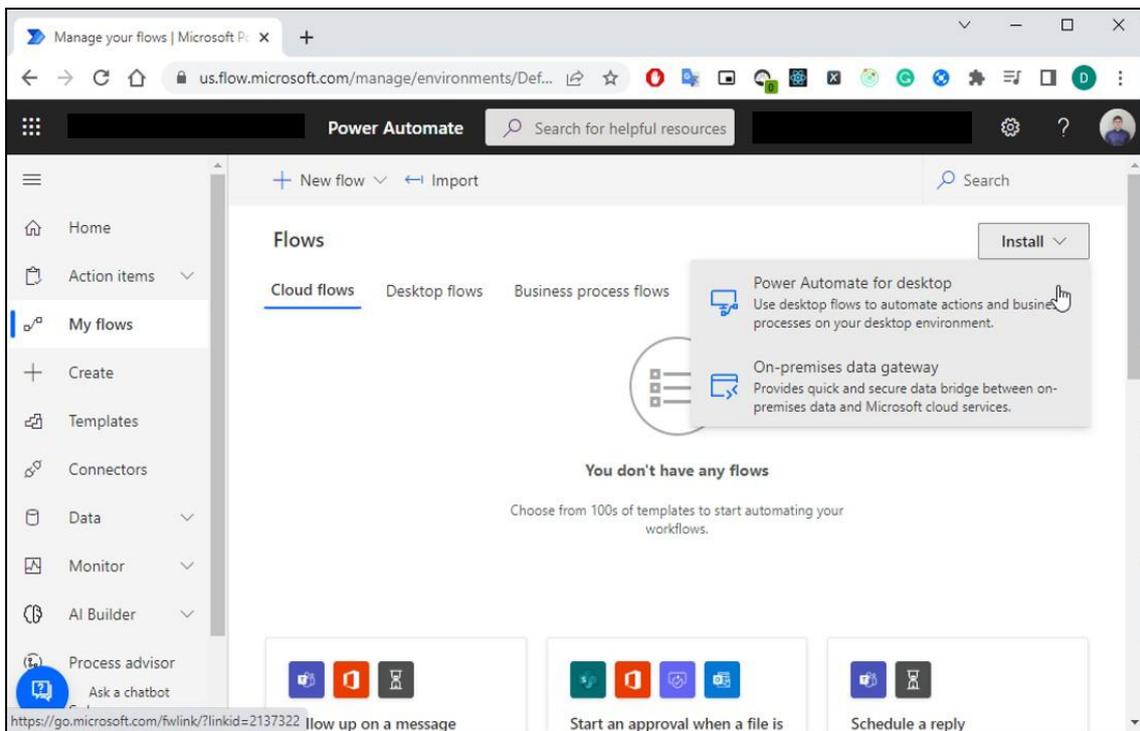


Fig 3: Automate your workflow management with Microsoft Power Flow

We start by completing the installation after downloading the file. Figure 3 shows the tool installation process, which includes after selecting the last checkbox and hitting the

"Next" button on several screens. Installing Power Automate is only the beginning; it also adds web automation extensions to Chrome and Edge.

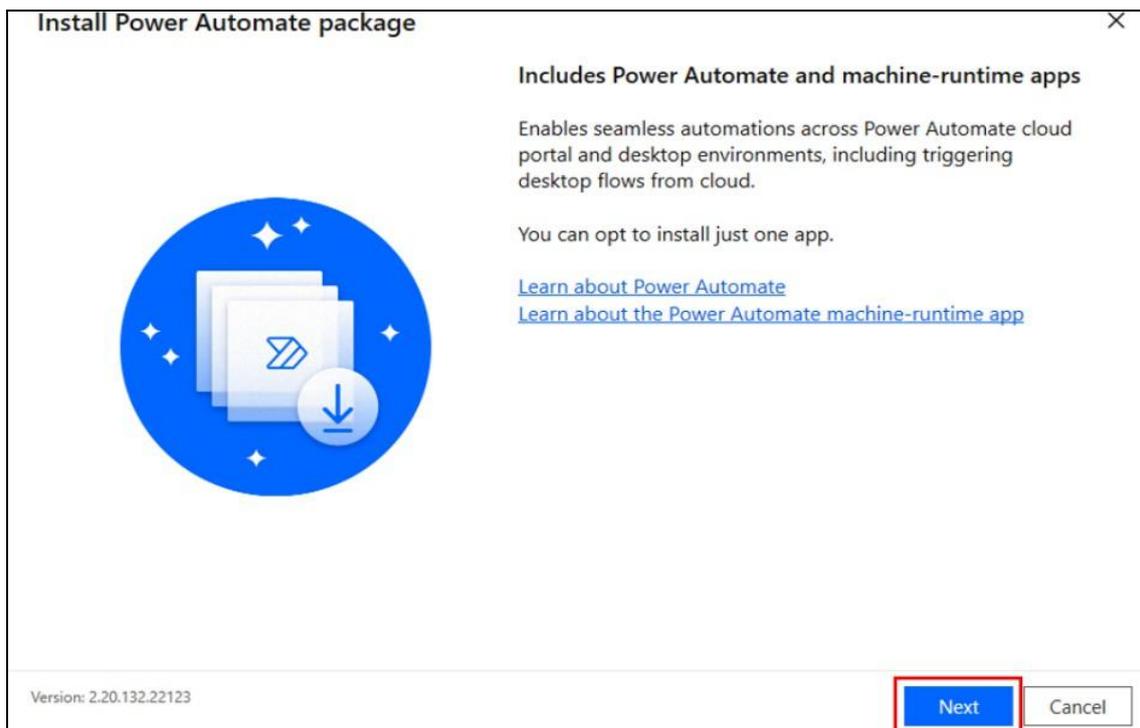


Fig 4: Install Power Automate package

Once it's finished, choose your favourite browser from the list and activate the Power Automate extension. Then you are good to go to start Power Automate desktop.

Conclusion

The business has to create a procedure to regularly assess

the performance of its current RPAs. Even when RPAs provide results, not often do they know who will reap the benefits. Some possible methods for fixing mistakes and problems include keeping everyone in the team informed on newly developed RPAs, having frequent meetings with all team leaders, and so on. Workers might be provided with a

standard document outlining RPA standards and procedures or with minimal training in the field. They will be better able to manage the easy mistakes and develop self-assurance as a result. The organisation should have a diverse set of RPAs with different functions to lessen the likelihood of being too dependent on a few. Automation would be more useful across departments if additional small-scale RPAs or macros were introduced for staff to run independently as required. Particularly during closings, when quick reporting is critical, employees should have faith in the RPA output. We need to figure out why people are skeptical about the evidence as quickly as feasible. It is important to ensure that the personnel have timely access to the data. Customers may get frustrated and lose faith in RPAs if reports are late during closings.

credited.

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