Pak. j. life soc. Sci. (2024), 22(2): 18380-18399 E-ISSN: 2221-7630;P-ISSN: 1727-4915

Pakistan Journal of Life and Social Sciences

www.pjlss.edu.pk

https://doi.org/10.57239/PJLSS-2024-22.2.001346

RESEARCH ARTICLE

Development of Robotic Process Automation (RPA) for Contract Activation Automation at PT. XYZ

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ARTICLE INFO

Received: Sep 12, 2024

Accepted: Nov 10, 2024

Keywords

Robotic Process Automation

RPA

Contract Activation

Operational Efficiency

Repetitive

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ABSTRACT

The automotive industry is one of the priority sectors in the "Making Indonesia 4.0" program that encourages the use of advanced technology to improve operational efficiency. PT. XYZ, an automotive financing company, faces challenges in activating credit contracts which are still done manually. This process takes up to 3 hours 31 minutes per three work cycles, resulting in 52 contracts per day with an average of 5–8 minutes per contract. Human errors, such as mismatched due dates and unit deliveries, often occur, hampering efficiency and slowing down payments to suppliers. This study aims to develop a Robotic Process Automation (RPA) solution using Microsoft Power Automate to accelerate and improve process efficiency. The methodology used is Lean Six Sigma with the DMAIC (Define, Measure, Analyze, Improve, Control) tools approach. Observations, interviews, and data analysis were conducted to identify processes that can be automated. The results show that RPA is able to reduce the process time from 3 hours 31 minutes to 3 hours 18 minutes (a decrease of 0.87%) and increase the number of contracts from 3,012 to 3,034. RPA also reduces human error, speeds up processes, and allows employees to focus on strategic tasks. This study proves that RPA is effective in increasing operational efficiency and productivity, especially in repetitive administrative processes. The use of RPA at PT. XYZ has a positive impact on internal efficiency while supporting flexibility and speed to compete in the industrial era 4.0.

INTRODUCTION

Industry Automotive is one of five manufacturing sectors whose development is being prioritized by the government. This aims to make the national automotive industry one of the pioneers in implementing the fourth industrial revolution according to the government program entitled "Road Map for Making Indonesia 4.0". The emergence of this revolution changed many things in various sectors which initially required many workers to conduct their operations, but are now replaced by the use of technological machines. With the industrial revolution 4.0, life has become easy, fast and cheap (Sutrisno, 2018).

In line with the government program in industrial revolution 4.0, in this research it is PT. XYZ is a financing company for passenger cars and commercial trucks that also wants to conduct the 4.0 revolution. Management hopes that the company can increase automation in operational systems, because currently there is a lot of repetitive administrative work that is still being done. When humans are asked to conduct processes repeatedly, this can lead to the risk of human error and the company being unable to maximize employee potential. This is because the current labor market has few employees with qualified abilities, hiring humans for these repetitive tasks can waste valuable resources (Fernando & Harsiti, 2019).

After the researchers made observations at PT. XYZ, we discovered that there was a problem with activating the credit contract in Treasury. Some of the problems found included the fact that activating credit contract data was still repeated in large numbers, causing frequent errors and contract maturity dates that did not match the calculations.

Therefore, there is an opportunity to take advantage Robotic Process Automation (RPA) in operational systems. RPA software is a set of technologies that utilize robots to replace humans in performing administrative tasks. RPA automates basic tasks and reduces process time and costs. RPA is a new technology that will help various industries advance and compete to stay at the top of business competition. RPA uses robots to replace human activities in carrying out administrative tasks (Nawaz, 2019).

Although RPA has benefits to help companies accelerate business processes, reduce operational costs and make human resources more effective and efficient. The benefits of RPA have been well documented and it cannot be directly ascertained that the implementation of RPA will benefit the organization. In 2018, according to Gartner data, the progress of RPA experienced a 63.1% increase in global revenue, or around US$846 million (Adrian, 2020). But in 2019 in research (Syed, et al., 2019), only 20% of organizations implementing RPA achieved business value that exceeded expectations, and 25% to 75% of RPA projects failed. In connection with the government's appeal regarding the implementation of industry 4.0, one of the variables that significantly affects the competitiveness of the leading manufacturing sector of the Making Indonesia 4.0 program is workforce productivity which has a positive effect on the competitiveness of the leading manufacturing sector (Mubyarto & Sohibien, 2019). Thus, the use of RPA in industry 4.0 can increase the efficiency and effectiveness of PT's operational system. XYZ to be more competitive.

To solve this problem, a credit contract information system must be built. This system should help the Treasury to automatically activate credit contracts. "Development of Robotic Process Automation (RPA) for Contract Activation Automation at PT. XYZ" RPA can speed up business processes in the company.

This research aims to develop Robotic Process Automation using Microsoft Power Automate software in the contract activation process at PT. XYZ, as well as speeding up the company's business processes by utilizing RPA technology.

LITERATURE REVIEW

Understanding Robotic Process Automation (RPA)

Robotic Process Automation (RPA) is a technology that can imitate and combine human actions when interacting with digital systems to conduct a process. According to (Widiantoro, 2022), RPA is an innovation in automation technology that can increase a company's competitiveness. Thus, RPA is software that performs a combination of activities, transactions, and tasks in one or more applications without human intervention. Careful planning and design is needed to optimize the use of RPA.

Background and Related Work

Novitawaty & Hendradi (2019) in the Proceedings of the National Technology Innovation Seminar researched the use of robot software to automate and speed up the process of integrating systems and humans in various business processes. This journal discusses the use of Robotic Process Automation (RPA) to speed up the integration of systems and humans into various business processes. The analysis found that RPA is very easy to use with AI components that can be used drag-and-drop and does not require a lot of programming, so its development can be performed by human resources with insufficient expertise. As part of RPA technology, UiPath can manage more than one task at a time and execute them automatically according to a pre-defined bot sequence.

Adrian (2020) in the Journal of Information Systems, Applied, Management, Accounting and Research examines the use of robot process automation in financial audits. This journal explains the utilization Robotic Process Automation in the field of financial auditing. Reconciliation and analysis processes, dual-purpose audits, and public accounting practices are examples of RPA implementation. RPA implementation is performed in three stages: process understanding, audit data standardization

(SDA), and execution of RPA-based audit tests. The process understanding stage consists of identifying and analyzing audit processes that will be used as good candidates for RPA implementation. Because RPA audit applications must have consistency across proposals, the audit data standardization stage will be replaced by RPA.

Fernando & Harsiti (2019) in the Information Systems Journal researched Literature Studies: Robotic Process Automation. This journal includes all topics about Robotic Process Automation (RPA). Starting with the meaning of RPA, the difference between RPA and conventional automation, types of RPA, tasks that can be performed by robots, the benefits of RPA for companies, RPA case studies, combining RPA with automation Enterprise Resource Planning (ERP), and RPA Implementation. Thus, the discussion concluded that Robotic Process Automation (RPA) is a revolution in automation technology that can increase a company's competitiveness. Good planning and design is required to maximize the use of RPA.

Putra (2014) in His research examined the workload analysis of tellers and back office at Bank BCA KCP Cilandak. Based on the results of the workload analysis, this research is used as a recommendation for the ideal number of tellers and back office requirements at BCA KCP Cilandak to meet client needs. To calculate workload analysis, the method Full Time Equivalent (FTE) is used. This starts with identifying critical tasks and functions for tellers and the back office. Then, they compare the use of productive and unproductive work time to produce the ideal amount needed to provide optimal customer service. The research results show that the tellers and back office of BCA KCP Cilandak on average have a lower workload. Therefore, it is necessary to increase performance or perhaps increase the back office and teller workload.

METHODOLOGY

This study uses a bottom-up approach from the Business Process Management (BPM) methodology, which aims to improve business activities and processes gradually (Lahajnar & Rozanec, 2016). The lean six sigma method with the DMAIC technique is applied, covering five phases: Define, Measure, Analyze, Improve, and Control.

The Define phase uses activity diagrams to identify business process components and explore existing obstacles through interviews, observations, and literature studies (Fitriana, Rozas, & Wahyudi, 2021). The measurement phase identifies dominant variables through significant analysis, then creates a Pareto diagram to reduce errors (Rahayu, Purba, & Susetyo, 2023). The analysis phase uses root cause analysis to explore the root of the problem that causes waste and other problems (Fitriana, Rozas, & Wahyudi, 2021). One of the methods used is the 5-Why Analysis, where the question "Why?" is asked five times to find the deep cause of the problem (Irhamni & Pandria, 2022). In the improvement phase, solutions are designed and tested to improve performance using Robotic Process Automation (RPA) through Microsoft Power Automate (Pribadi & Ratnawati, 2020). The control phase aims to complete the implementation, control performance, and ensure defects do not recur with standardization (Firmansyah & Yuliarty, 2020). This methodology enables continuous optimization of business processes.

RESULTS

Define

The current condition in contract activation is that Treasury team employees periodically check the Go Live Execution menu in relation to the monthly contract report for each branch line and send a recap of the achievements of the monthly contract report. After the monthly report from each branch line is complete, the Treasury team will then take the necessary data from the monthly report for each branch line and enter it into the monthly contract report.

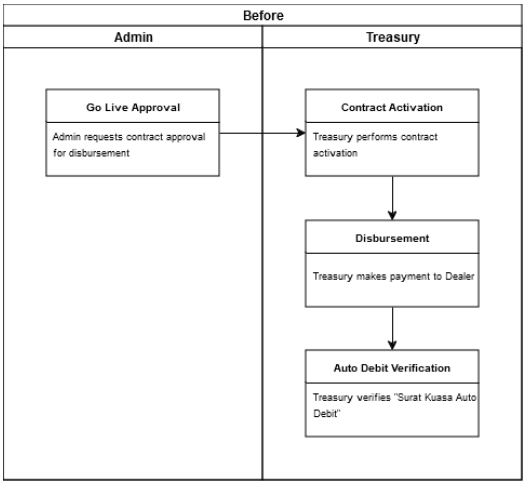

Figure 4.1 Treasury Team Process Flowchart Before RPA Development

Measure

One of the problems with the work process at PT. XYZ is a number of repetitive processes performed manually that take a lot of time to do. When researchers conducted interviews with the Treasury team, they provided information that the contract activation process needed to be performed one by one in quite large numbers repetitively and did not require an analysis process. So this repetitive process makes the Treasury team more saturated and can cause human errors, such as data input errors.

It can be seen from the data in the picture that the average lead time for the work process of the Admin team and Treasury team in the 3 work cycles before using RPA was 3 hours 31 minutes from 3,012 contracts performed from 1 April to 31 May 2024.

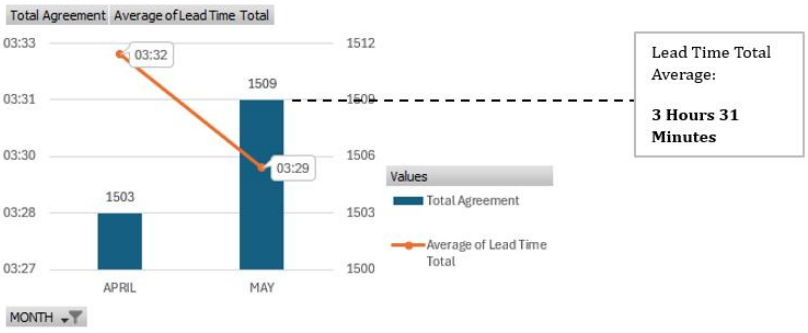

Figure 4.2 Total Lead Time Before RPA Development

Analyze

Researchers found facts based on observations and interviews with the Treasury team. These facts can be used in the 5-why analysis method, the analysis of which is presented in Table 4.1 below.

Table 4.1 5-Why Analysis

Problem Statement	:	The length of time for activating a credit contract in the Treasury section.
		Cause
Why	?	Manual processes are performed repeatedly in large quantities.
Why	?	There is no automation system that supports the contract activation process.
Why	?	Still relying on human power to do repetitive administrative work.

Why	?	Not maximizing Robotic Process Automation (RPA) technology in operational processes.
Why	?	There has been no initiative from employees to develop Robotic Process Automation (RPA).
Root Cause	:	Lack of employee initiative to develop automation technology in the company's business processes.

The long time for credit contract activation in the Treasury department is caused by a manual process that is performed repeatedly in large numbers. This happens because there is no automation system that supports the contract activation process. The company still relies on human resources to complete repetitive administrative work, because it has not maximized Robotic Process Automation (RPA) technology in its operations. This condition is caused by the lack of initiative from employees to propose or develop the implementation of RPA, which ultimately becomes an obstacle to increasing the efficiency of business processes in the company.

Automation can solve problems found, such as repetition in the contract activation process. This automation is used to reduce the amount of time required to complete a process. Apart from wasting time carrying out the contract activation process one-by-one, the human resources used to conduct this process are also wasted. In addition, the human resources used to conduct this process can perform other tasks that require more time and attention. In addition, humans themselves can make mistakes that waste time and energy. Therefore, PT. XYZ must be able to implement contract activation testing automation for the Treasury team. This will increase employee productivity and save time. Robotic Process Automation, also known as RPA, is a tool that can be used to achieve this goal.

RPA will be implemented in two ways: through web-based applications and through robot programs. RPA via web-based applications will enable automatic data entry during the application testing process, and robot programs will assist in the contract activation process.

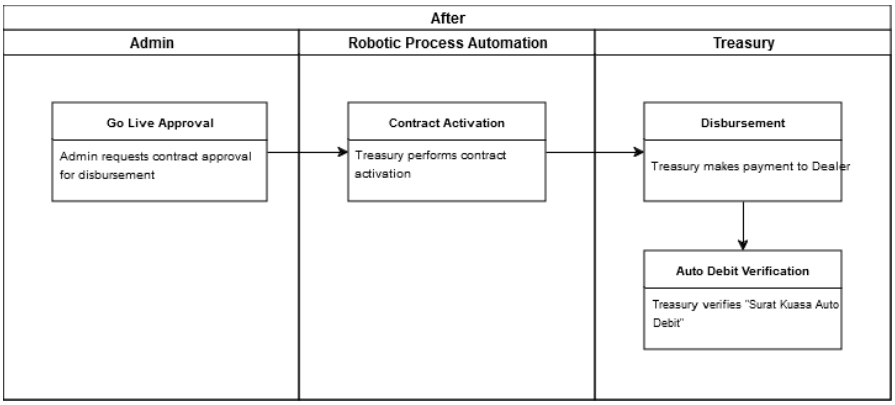

Figure 4.3 Flowchart Treasury Team Process After RPA Development

During the app creation process, a variety of software and hardware is used, including:

a) Hardware

The application must have the minimum hardware specifications required to operate:

- Random Access Memory (RAM) minimum 4 GB
- Processor 3.2 GHz

b) Software

The following software supports application creation:

- Microsoft Power Automate
- Operating System: Windows 10 (Service Pack 1) 32-bit

- Core System of PT. XYZ (Confined)

Improve

A suitable application for contract activation can be designed from the homepage. After that, the user will go to the home page and find a menu Credit Process. Next, the user will be on the Credit Process page and find the Go Live New menu.

The process of running the application begins with logging in to the Confins application, which means running the application first. Then, menu 1 main Credit Process will be displayed, and the final menu option is Go Live New. On the page Go Live New Contracts will appear that are ready to be activated by the Treasury team from branch transactions. Then the Treasury team will select one of the contracts by clicking Entry. Then information will appear such as: Customer Name, Installment Amount, Agreement No, Agreement Date, Effective Date, Delivery Date, Additional Interest And Mapping Product. Then the Treasury team will enter it Agreement Date, Effective Date, Mapping Product and counting Additional Interest. After that, the Treasury team will check Supplier Branch Name, if the account number that appears is a CIMB Niaga bank account, the Treasury team will inform the Payment team not to make payment and submit a menu Go Live New. If the account number appears other than CIMB Niaga bank, the Treasury team will immediately submit the menu Go Live New for contract activation without information to the Payments team.

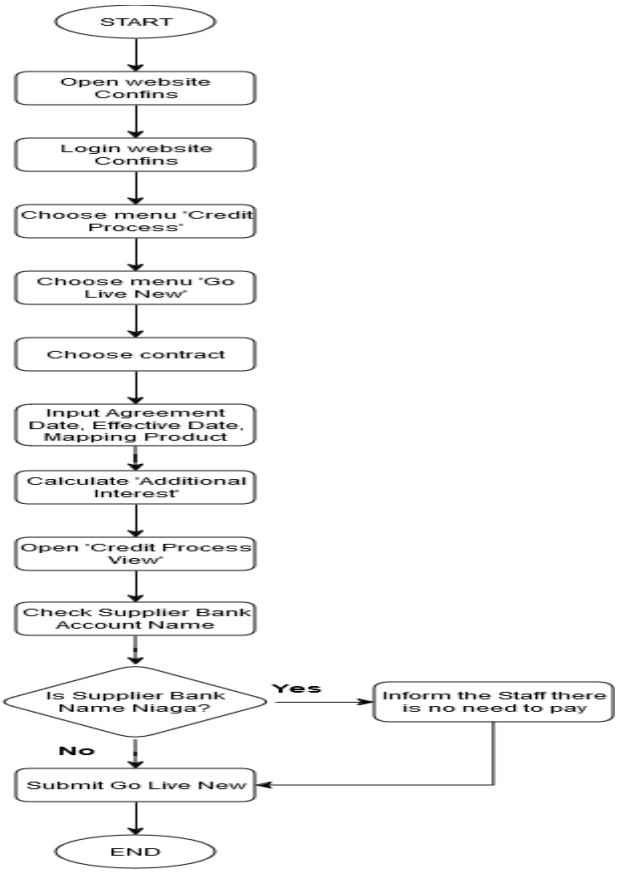

Figure 4.4 Flowchart Contract Activation

At this stage, the author analyzes the need for bot creation, then designs the required bot to suit the expected solution design. To achieve this, the authors used design calculations to generate work processes and engineering frameworks studied during the research.

The following are the development stages of Robotic Process Automation (RPA) in the contract activation process based on Figure 4.4 in Methodology, namely:

1. Set launch new Microsoft Edge

In Figure 4.5 the researcher set Microsoft Edge as the main browser to open the PT core system. Web-based XYZ (confins) so that RPA can run.

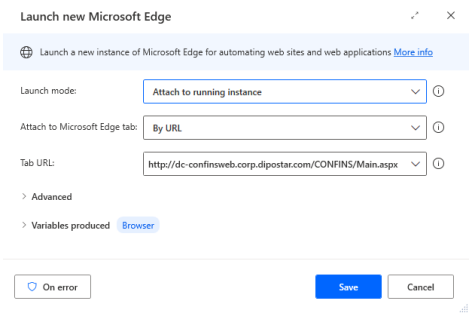

Figure 4.5 Layout Set launch new Microsoft Edge

2. Set variable

The next stage, in Figure 4.6 shows the researcher creating a CIMB Niaga bank account to be used as a variable so that conditions can be created if text on screen (OCR) in the next stage.

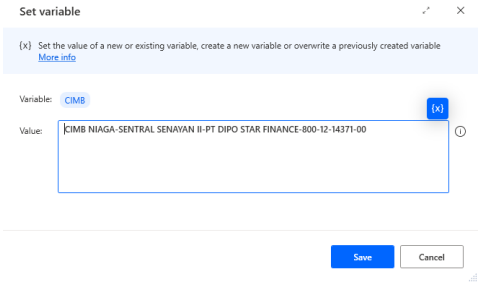

Figure 4.6 Layout Set variable

3. Set drop-down list value on web page

Figure 4.7 shows that the RPA process can select "Unhold" automatically in the dropdown Task Claim Status on the menu Go Live New.

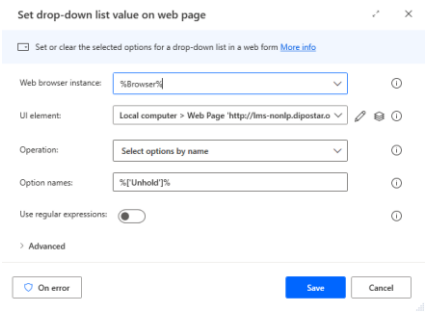

Figure 4.7 Layout Set drop-down list value on web page

4. Set wait for web page content

In Figure 4.8, the researcher set the waiting time for the web page to appear on the user's screen for 10 seconds so that the automation process does not error when the system is running loading.

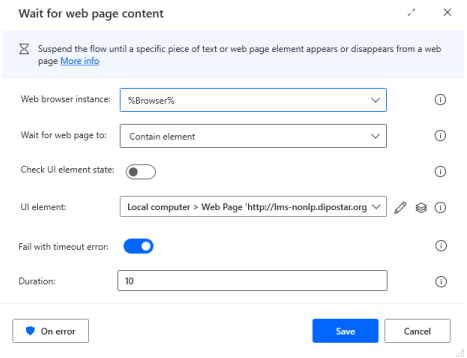

Figure 4.8 Layout Set wait for web page content

5. Set press button on web page

In Figure 4.9, to set RPA you can click the button Search, Action And Calculate so that the process can proceed to the next level.

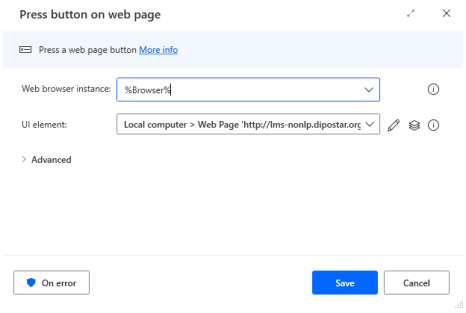

Figure 4.9 Layout Set press button on web page

6. Set populate text field on web page

Figure 4.10 shows RPA to automatically fill in the Notes field on the Contract Detail page.

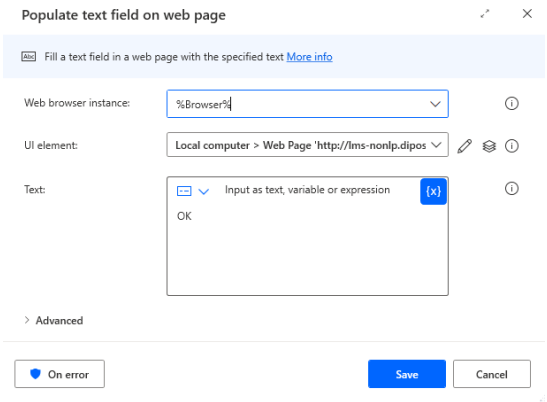

Figure 4.10 Layout Set populate text field on web page

7. Set click link on web page

After the process on the page Contract Detail done. Figure 4.11 shows that RPA is automatically set to go to the next page, namely the Supplier Bank Account Detail page.

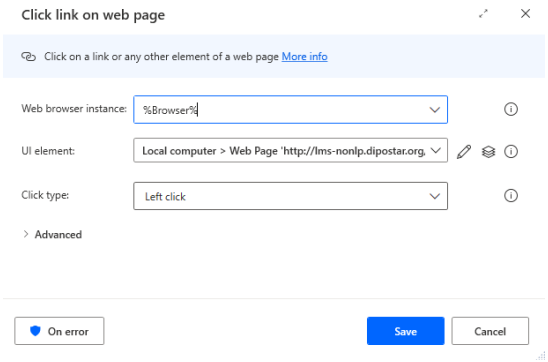

Figure 4.11 Layout Set click link on web page

8. Set wait for text on screen (OCR)

In Figure 4.12, researchers use the OCR feature to read the text Supplier Bank Account No. “CIMB Niaga” first for 10 seconds on the Supplier Bank Account Details page before proceeding to the next process.

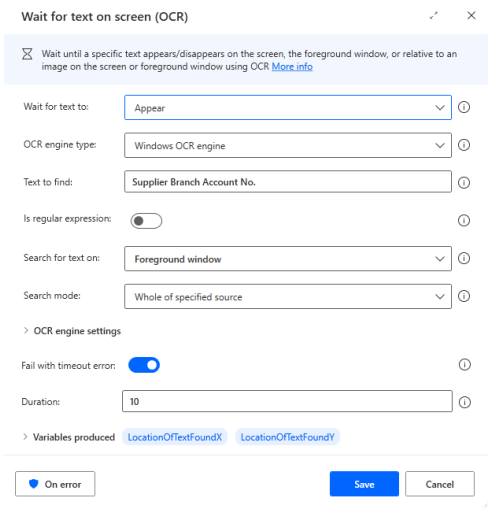

Figure 4.12 Layout Set Wait for text on screen (OCR)

9. Set conditionals = If text on screen (OCR)

In Figure 4.13, the researcher creates conditions if OCR reads the text Supplier Bank Account No. "CIMB Niaga", then RPA will display a pop-up message. If RPA does not read the text, RPA will continue the contract activation process.

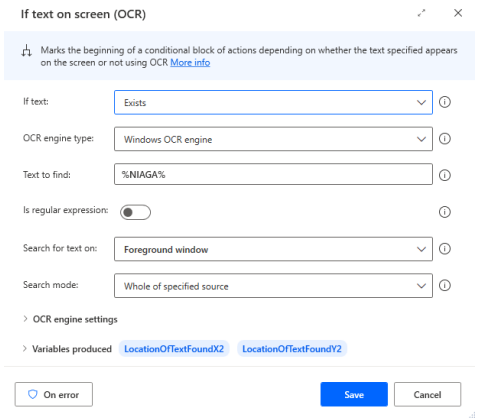

Figure 4.13 Layout Set conditionals = if text on screen (OCR)

10. Set display message

Figure 4.14 is the setting for the If text on screen (OCR) condition if the text Supplier Bank Account No. "CIMB Niaga" is on the Supplier Bank Account Detail page, then the RPA displays a pop up message "This Contract is no need to pay, please inform another treasury staff".

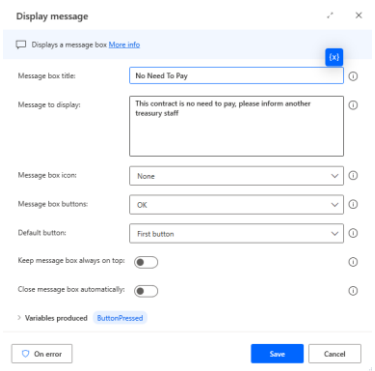

Figure 4.14 Layout Set display message

11. Set stop flow

Figure 4.15 shows the settings after the pop-up message "No Need To Pay" is performed, the contract

activation flow process can stop automatically.

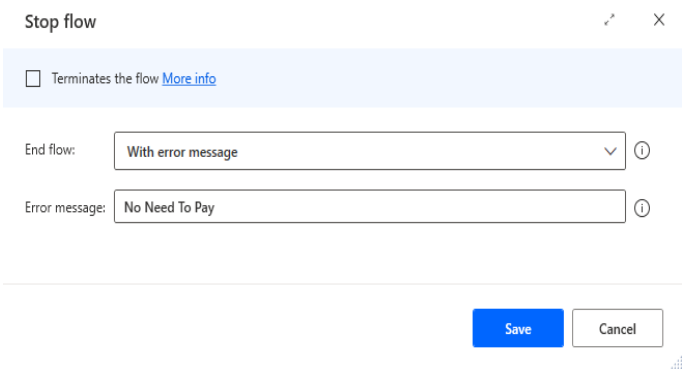

Figure 4.15 Layout Set stop flow

12. Set send mouse click

In Figure 4.16, if the RPA process is still running because the text Supplier Bank Account No. not "CIMB Niaga". So the RPA process is still running by making the cursor move automatically to close the Supplier Bank Account Detail page and return to the Search page.

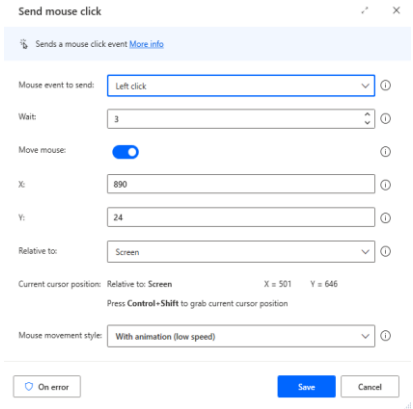

Figure 4.16 Layout Set send mouse click

13. Set loop

In Figure 4.17, the researcher made the RPA process performed repetitively as long as there were still contracts that were visible or not yet active on the Search page. If the contract no longer exists and everything is active, then the RPA process has been completed.

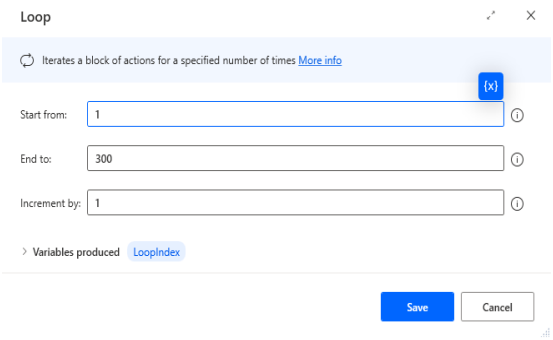

Figure 4.17 Layout Set loop

After RPA is created using Microsoft Power Automate based on Flowchart Contract Activation in Figure 4.4. There are seven or eight use case what needs to be done to make the contract active. The following is use case from the contract activation process which will be performed using RPA:

Use Case 1: Open website Confins

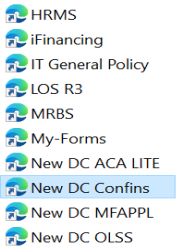

Figure 4.18 Website Borders

Figure 4.18 shows the initial stage in the contract activation process. First, users need to open the Confins website first before accessing RPA. For details of the mechanism use case can be seen from Table 4.2 below.

Table 4.2 Fully Developed Use Case Description Open website Confins

Nama Use Case	Open website Confins	
Scenario	Open the confins website	
Triggering event	User wants to activate the contract	
Short description	Users open the confins website by clicking the link in the desktop shortcut folder	
Actor	User	
Use case	-	
Stakeholders	User	
Prekondisi	The confines website link should be available in the desktop shortcut folder	
Preconditions	The confines website can be opened	
Activity Flow	**Actor** 1. The user clicks the confins website link in the desktop shortcut folder.	**System** 1.1 System opens confines website
Exception conditions	1.1 The system cannot open the confines website	

Use Case 2: Login website Confins

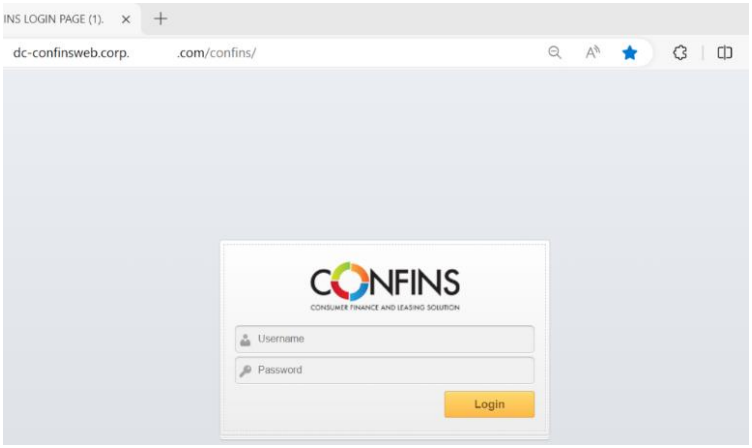

Figure 4.19 Confins Website Login Layout

In Figure 4.19 is part of the page login website confins which is the second stage in contract activation. User enters username And password their Confins account which has been provided by the IT department. For details of the mechanism use case can be seen from Table 4.3 below.

Table 4.3 Fully Developed Use Case Description Login website Confins

Nama Use Case	Login website confins
Scenario	Go to the confins website
Triggering event	User wants to log in to the confins website
Short description	User logs in to the confins website by filling in username and password

Actor	User	
Use case	-	
Stakeholders	User	
Prekondisi	The confins website can be opened	
Preconditions	Users can log in to the confins website	
Activity Flow	**Actor** 1. User enters username and password	**System** 1.1 System displays homepage
Exception conditions	1.1 Invalid user credentials	

Use Case 3: Select menu 'Credit Process'

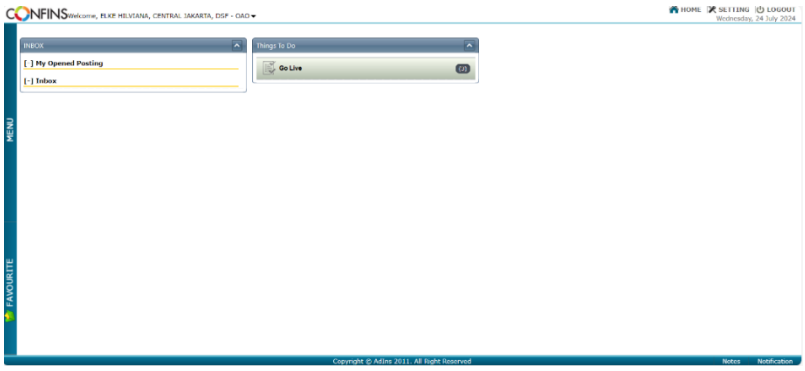

Figure 4.20 Layout Homepage

After logging in to the confins website account. The website will bring up the homepage page as shown in Figure 4.20. Then users need to click Menu, select Disbursement, select Credit Process. For details of the use case mechanism, please refer to Table 4.4 below.

Table 4.4 Fully Developed Use Case Description Select menu 'Credit Process'

Nama Use Case	Select the 'Credit Process' menu	
Scenario	User selects the 'Credit Process' menu	
Triggering event	User wants to open the 'Credit Process' menu	
Short description	Users can enter the 'Credit Process' menu by clicking the 'Credit Process' button	
Actor	User	
Use case	-	
Stakeholders	User	
Prekondisi	Users must log in to the website first	
Preconditions	The 'Credit Process' menu can be opened	
Activity Flow	**Actor** 1. User logs in 2. User click on the Credit Process menu	**System** 1.1 System logs in user 1.2 System display homepage 2.1 The system displays the Credit Process menu
Exception conditions	1.1 Invalid user credentials 2.1 Credit Process cannot be opened	

Use Case 4: Select menu 'Go Live New'

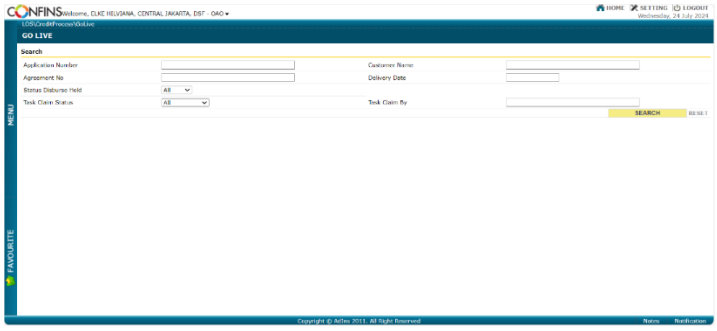

Figure 4.21 Layout Go Live New Page

After selecting the 'Go Live New' menu. The website will display the Go Live New page as shown in Figure 4.21. At this stage, users can start accessing RPA to run the contract activation process automatically. For details of the use case mechanism, please refer to Table 4.5 below.

Table 4.5 Fully Developed Use Case Description Select menu 'Go Live New'

Name Use Case	Select the 'Go Live New' menu	
Scenario	User selects the 'Go Live New' menu	
Triggering event	The user wants to open the 'Go Live New' menu	
Short description	Users can enter the 'Go Live New' menu by clicking the 'Go Live New' button	
Actor	User	
Use case	-	
Stakeholders	User	
Prekondisi	User selects the 'Credit Process' menu first	
Preconditions	Contract List Page can be opened	
Activity Flow	**Actor** 1. User click the Go Live New menu	**System** 1.1 The system displays the Contract List Page
Exception conditions	1.1 Contract List Page cannot be opened	

Use Case 5: Select a contract

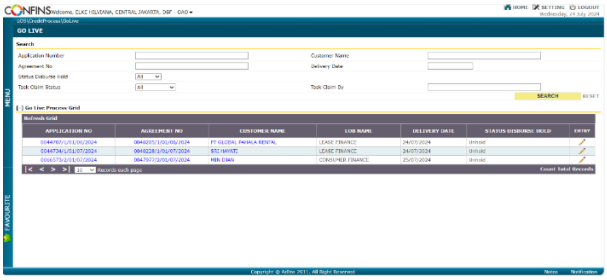

Figure 4.22 Layout Contract List Page

In Figure 4.22 is the first stage of RPA carrying out the contract activation process. First, RPA will choose Task Claim Status 'Unhold', this aims to ensure that the contracts selected are only contracts ready to be activated. Apart from choice Task Claim Status 'Unhold' there is also an option ' Hold'. If the contract has the status 'Hold', then the branch requested that the contract be postponed because there were several things that needed to be processed before the contract was activated. Then, if RPA has finished filtering contracts with the status 'Mischief', then RPA will select the top contract and click the pencil button in the column entry to enter the next process. For details of the mechanism, use case can be seen from Table 4.6 below.

Table 4.6 Fully Developed Use Case Description

Name Use Case	**Select a contract**	
Scenario	Bot selects contract	
Triggering event	The bot wants to select a contract to activate	
Short description	The bot selects an 'unhold' contract to be activated	
Actor	Boot	
Use case	-	
Stakeholders	User	
Prekondisi	User selects the 'Go Live New' menu first	
Preconditions	Users can enter the Contract Detail Page	
Activity Flow	**Actor** 1. Bot click Task Claim Status 'unhold' 2. Bot selects contracts by clicking the pencil button	**System** 1.1 System filter for contracts that are 'unhold' 2.1 The system displays the Contract Detail Page
Exception conditions	1.1 No contracts are 'unhold' 1.2 Contract Detail Page does not exist opened	

Use Case 6: Input Agreement Date, Effective Date, Mapping Product

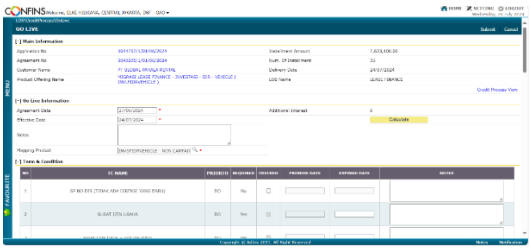

Figure 4.23 Layout Contract Detail Page

After the contract selection process has been performed, RPA will input agreement date according to the date when the contract activation process was performed. Next RPA will input effective date according to date delivery date which is on section main information. Then RPA will choose mapping product in accordance product offering name that is written on section main information. For details of the mechanism use case can be seen from Table 4.7 below.

Table 4.7 Fully Developed Use Case Description Input Agreement Date, Effective Date, Mapping Product

Name Use Case	Input Agreement Date, Effective Date, Mapping Product	
Scenario	Bot input agreement date, effective date, mapping product	
Triggering event	Bot ingin input agreement date, effective date, mapping product	
Short description	Bot input agreement date, effective date, product mapping for completeness of contract data	
Actor	Bot	
Use case	-	
Stakeholders	User	
Prekondisi	Bot selects contracts first	
Preconditions	Bot calculate additional interest	
Activity Flow	**Actor** 1. Bot input agreement date 2. Bot input effective date 3. Bot input mapping product	**System** 1.1 The system returns the agreement date output 2.1 The system displays the effective date output 3.1 The system displays the output mapping product
Exception conditions	1.1 Agreement date failed to be inputted 2.1 Effective date failed to be inputted 3.1 Mapping product failed to be inputted	

Use Case 7: Calculate Additional Interest

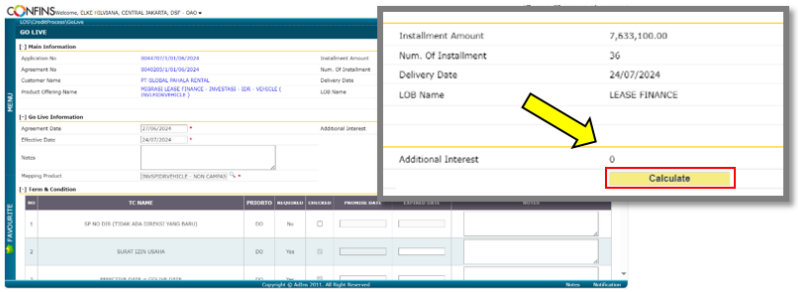

Figure 4.24 Layout Additional Interest field

Next, RPA will click the 'Calculate' button as shown in Figure 4.24, in this process it is nominal additional interest will be calculated by taking the result data input from branch users. When the credit calculation in the contract does not include additional interest costs, the calculation results from the system will give a value of zero field additional interest. If the credit calculation in the contract concerns additional interest costs that are usually caused effective date one month past delivery date, then the system will issue the calculation results on field additional interest. For details of the mechanism, use case can be seen from Table 4.8 below.

Table 4.8 Fully Developed Use Case Description Calculate Additional Interest

Name Use Case	Calculate Additional Interest	
Scenario	Bot calculate additional interest	
Triggering event	Bot want calculate additional interest	
Short description	Bot calculate additional interest to calculate additional interest on contracts	
Actor	Bot	
Use case	Run after input agreement date, effective date, mapping product	
Stakeholders	User	
Prekondisi	Bot inputs agreement date, effective date, product mapping first	
Preconditions	Bot click the credit process view button	
Activity Flow	**Actor** 1. Bot calculate additional interest	**System** 1.1 The system generates the results of the additional interest calculation
Exception conditions	1.1 Additional interest fails to be calculated	

Use Case 8: Open 'Credit Process View'

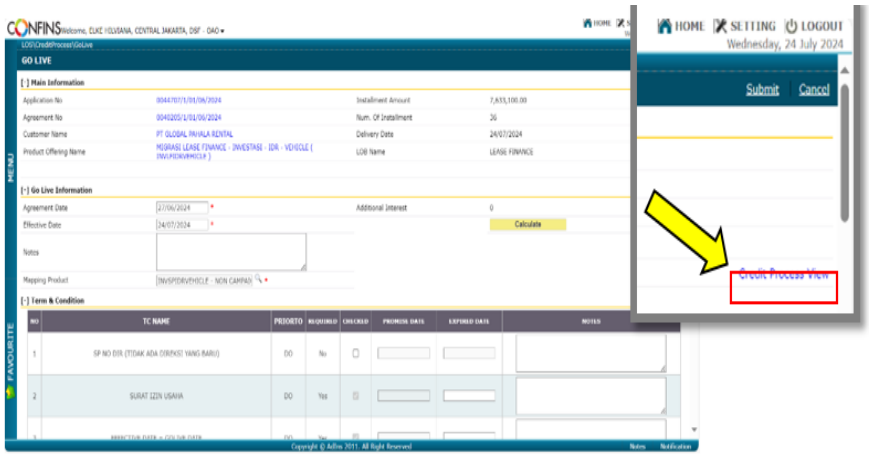

Figure 4.25 Layout field Credit Process View

In this process after the bot is successfully input agreement date, effective date, mapping product and calculate additional interest, then the bot will click 'Credit Process View' button as shown in Figure 4.25 to open Supplier Bank Account Detail Page. For details of the mechanism, use case can be seen in Table 4.9 below.

Table 4.9 Fully Developed Use Case Description Open Credit Process View

Name Use Case	Open Credit Process View	
Scenario	Bot open credit process view	
Triggering event	Bot want open credit process view	
Short description	Bot open credit process view to enter Supplier Bank Account Detail Page	
Actor	Bot	
Use case	Executed after calculating additional interest	
Stakeholders	User	
Prekondisi	Bot calculate additional interest first	
Preconditions	Bots can log in to the Supplier Bank Account Detail Page	
Activity Flow	**Actor** 1. Bot open credit process view	**System** 1.1 The system opens a new tab Supplier Bank Account Detail Page
Exception conditions	1.1 System failed to open new tab Supplier Bank Account Detail Page	

Use Case 9: Check Supplier Bank Account Name

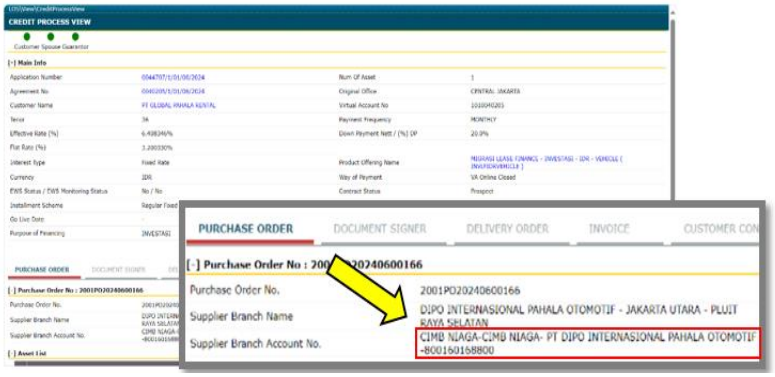

Figure 4.26 Layout Supplier Bank Account Detail Page

Process stages Check Supplier Bank Account Name is an important stage because at this stage it will give rise to decision, whether the supplier's bank account is 'Niaga' or not. If the supplier's bank account is 'Niaga', then RPA will continue the process to stage seven, while if the supplier's bank account is not 'Niaga', then RPA can immediately proceed to stage eight. For details of the mechanism use case can be seen from Table 4.10 below.

Table 4.10 Fully Developed Use Case Description Check Supplier Bank Account Name

Name Use Case	Check Supplier Bank Account Name	
Scenario	Bot check supplier bank account name	
Triggering event	Bot want check supplier bank account name	
Short description	Bot check supplier bank account name to give a decision if bank account 'Niaga' or others	
Actor	Bot	
Use case	-	
Stakeholders	User	
Prekondisi	Bots can log in to the Supplier Bank Account Detail Page	
Preconditions	The bot can give a decision to proceed to use case 9 or 10	
Activity Flow	**Actor** 1. Bot check supplier bank account name 2. The bot proceeds to use case 9 by closing the supplier bank account detail page or to use case 10	**System** 1.1 The system displays the supplier's bank account name 2.1 System akan menutup supplier bank account detail page
Exception conditions	1.1 The system fails to display the supplier bank account name 1.2 System gagal menutup supplier bank account detail page	

Use Case 10: No Need to Pay, if Supplier Bank Name 'Niaga', inform the Staff there is no need to pay.

Table 4.11 Fully Developed Use Case Description Inform the Staff There Is No Need to Pay

Name Use Case	Inform The Staff There Is No Need To Pay	
Scenario	Bot inform the Staff there is no need to pay	
Triggering event	Bot reads Supplier Bank Account Name 'Niaga'	
Short description	Bot inform the Staff there is no need to pay by popping up a pop up message and stop RPA flow	
Actor	Bot	
Use case	Runs after the bot reads the Supplier Bank Account Name 'Niaga'	
Stakeholders	User	
Prekondisi	The bot has read the Supplier Bank Account Name 'Niaga'	
Preconditions	Bot pops up pop up message and stops RPA flow	
Activity Flow	**Actor** 1. Bot inform the Staff there is no need to pay 2. Bot stop RPA flow	**System** 1.1 The system pops up a pop up message 2.1 System stop RPA flow

Exception conditions	1.1 The system fails to pop up the message 2.1 System gagal stop RPA flow

Use Case 11: Submit Go Live New, if Supplier Bank Name is not 'Niaga'.

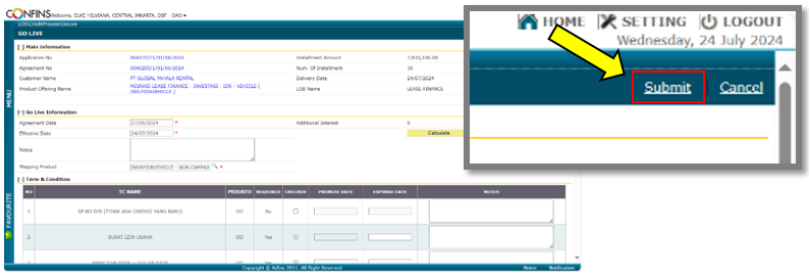

Figure 4.27 Layout Go Live New Submitting

After use case the ninth or tenth has already been performed. The next stage is process Submit Go Live New which is the final stage of RPA to process a contract. If so, click 'Submit' Button as shown in Figure 4.27, the contract status will become active and the screen display will return to Figure 4.22 Layout Contract List Page, then RPA will conduct the process looping as explained in stage 13. Set loop along with its appearance in Figure 4.17 Layout Set loop. For details of the mechanism, use case can be seen from Table 4.12 below.

Table 4.12 Fully Developed Use Case Description Submit Go Live New

Nama Use Case	Submit Go Live New	
Scenario	Bot submit go live new	
Triggering event	The bot is given a decision from use case 9 to submit go live new	
Short description	Bot submit go live new to activate contracts	
Actor	Bot	
Use case	Runs after the bot reads the Supplier Bank Account Name instead of 'Merchant'	
Stakeholders	User	
Prekondisi	The bot has read the Supplier Bank Account Name not 'Niaga' System menutup supplier bank account detail page	
Preconditions	The contract is active	
Activity Flow	**Actor** 1. Bot submit go live new	**System** 1.1 The system provides a notification that the contract is successfully activated 1.2 System menutup Contract Detail Page
Exception conditions	1.1 The system fails to provide a notification that the contract has been successfully activated 1.2 System failed to close Contract Detail Page	

The following table 4.13 shows an example of testing the development of Robotic Process Automation (RPA) in the contract activation process.

Table 4.13 Testing Scenario Testing for RPA Development

Test Case No	Test Case Summary	Step No	Step Description	Expected Result	Status
TC001	Activate contracts that have supplier bank accounts other than CIMB Niaga	1	Go to menu Credit Process - Go Live New	Open menu successfully	OK
		2	Choose "Unhold"	Filter the unhold contract in go live page	OK
		3	Click "Action"	Open go live detail page	OK
		4	Click "Calculate" button in Additional Interest	Additional Interest has been calculated	OK
		5	Fill "OK" in Notes Field Text Area	"OK" has been fillled	OK
		6	Click "Credit Process View" button	Credit Process View page has been opened	OK
		7	Check Supplier Bank Account No other than CIMB Niaga	Success check Supplier Bank Account No and continue process automation flow	OK

Test Case No	Test Case Summary	Step No	Step Description	Expected Result	Status
		8	Close Credit Process View page	Success close Credit Process View page	OK
		9	Click "Submit" button	Contract is activated	OK
TC002	Activate contracts that have CIMB Niaga supplier bank accounts	1	Go to menu Credit Process - Go Live New	Open menu successfully	OK
		2	Choose "Unhold"	Filter the unhold contract in go live page	OK
		3	Click "Action"	Open go live detail page	OK
		4	Click "Calculate" button in Additional Interest	Additional Interest has been calculated	OK
		5	Fill "OK" in Notes Field Text Area	"OK" has been fillled	OK
		6	Click "Credit Process View" button	Credit Process View page has been opened	OK
		7	Check Supplier Bank Account No that have CIMB Niaga	Show pop up message "Please process manually" and stop process automation flow	OK
		8	Remove contract from disbursement list	Contract has been removed	OK
		9	Close Credit Process View page	Success close Credit Process View page	OK
		10	Click "Submit" button	Contract is activated	OK

The results of the testing process based on several scenarios for the workflow that have been created are shown in Table 4.13. The test date, positive or negative test conditions, expected results, and result status are shown in the table above. Testing is performed by running different test scenarios for each workflow, which is performed in Microsoft Power Automate, to ensure that the workflow runs according to procedures and produces the expected results. The results show that each test scenario was successful.

Control

The long process of the Admin team and the Treasury team's work time after RPA development is shown in Figure 4.23 below.

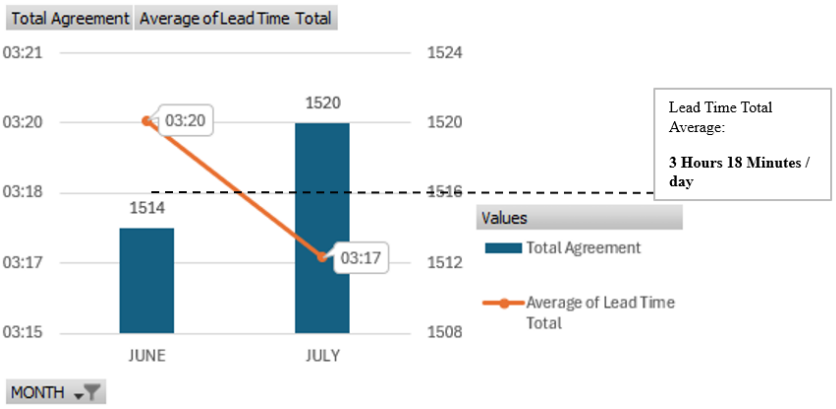

Figure 4.23 Total Lead Time After RPA Development

Table 4.14 shows a comparison of process time before and after RPA development. Initially, the Admin team and Treasury team's work time took 3 hours 31 minutes every three work cycles, but now it is 3 hours 18 minutes, a decrease of 12 minutes, or 0.87%, from the time before RPA development.

Table 4.14 Comparison Before and After RPA Development

	Sebelum Implementasi RPA			Sesudah Implementasi RPA			Lead Time Performance (Before - After)	% Performance (Before - After)
	April	May	Total Average (April + May)	June	July	Total Average (June + July)		
Lead Time Aktivasi Kontrak	00:44	00:42	00:43	00:36	00:35	00:36	00:06:59	0,49%
Lead Time Total	03:32	03:29	03:31	03:20	03:17	03:18	00:12:36	0,87%

With a decrease in time of 0.87%, this shows that the development of RPA in the Treasury team's work processes was successful. Studies show that RPA can increase process efficiency and productivity compared to manual processes. Increased process output means more work can be completed in less time. Ultimately, this can increase resource productivity and business profitability.

In addition to the time comparison, researchers also compared the number of contracts that could be activated before and after RPA development. Initially, the number of contracts that could be activated by the Treasury team before developing RPA was only 3,012 contracts, after developing RPA the total was 3,034 contracts. Increase in the number of contracts by 22 contracts, from the number of contracts before RPA development. Table 4.15 shows a comparison of the number of contracts before and after RPA development.

Table 4.15 Comparison of the Number of Contracts Before and After RPA

	Sebelum Implementasi RPA			Sesudah Implementasi RPA			Contract Activated Performance
	April	May	Total (April + May)	June	July	Total (June + July)	
Jumlah Contract Activated	1,503	1,509	3,012	1,514	1,520	3,034	22

Based on data processing and the results of discussions in developing RPA, things that can be done by PT. XYZ in improving the effectiveness of employee performance and business process efficiency in its company is as follows:

1. The research results show that the RPA development performed by the company influences the length of the employee performance process, especially in the contract activation process and the number of contracts obtained that can be activated. PT. XYZ can review the form of an RPA development program that is appropriate to its use to make employee work processes more efficient. The RPA development program must be accompanied by a performance management program so that companies can classify employee work as repetitive/administrative and strategic/analytical.

2. PT. XYZ needs to create a Research and Development team whose task is to look for innovations in RPA development. The Research and Development team can also conduct research into several departments by conducting interviews on the work they do and analyzing repetitive/administrative and strategic/analytical work. Then the RnD team will conduct research related to administrative work to develop RPA.

3. PT. XYZ needs to research several employees who have used RPA in their work, the aim is for the company to find out how much benefit RPA has in helping its employees' work processes.

CONCLUSION

Development of Robotic Process Automation (RPA) at PT. XYZ for the credit contract activation process has shown significant benefits. By using Microsoft Power Automate, RPA succeeded in speeding up business processes for the Treasury and Admin teams from 3 hours 31 minutes to 3 hours 18 minutes, increasing time efficiency. In addition, RPA also increased the number of activated contracts, from 3,012 to 3,034 contracts. This automation also reduces human error in repetitive tasks and allows employees to focus on more analytical and strategic work, thereby adding value to the company.

AUTHOR'S CONTRIBUTIONS

First Author performed research on the development of Robotic Process Automation for contract activation automation at PT. XYZ, designed the Robotic Process Automation process design using Microsoft Power Automate, and analyzed the RPA design and the impact of changes from the development of Robotic Process Automation for PT. XYZ. Second Author provided guidelines for the research process, provided suggestions and input, and reviewed the research results and manuscripts.

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