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A Review Paper on Business Process Automation Using RPA

S. W. Puranik

Department of Computer Engineering, K. J. College of Engineering Management & Research, SPPU
swapnil[at]pentastack. com; swapnilpuranik. penta[at]gmail.com

Abstract: ***The fourth wave of technological advancement is being witnessed - Robotic Process Automation emerge as new technology that automates routine, repeatable, rule - based tasks, and standardized task with higher accuracy and with lesser investment. RPA is the base for automation technologies as the integration of cognitive technologies with RPA is achieving automation to a new level and helping businesses to improve efficiency and productivity. This paper aims to give a review of RPA as a technology and how it can be beneficial to use.***

Keywords: automation, bots, process, robotic, RPA, tasks

1. Introduction

As Elon Musk once quoted "the robots will be able to do everything better than us". Business is increasingly using robots that work like a human. The robot can be programmed in such a way that it will perform a sequence of steps that human does. We can call robots a digital or virtual workforce. Autonomous robots are already positively impacting productivity, revenue, investment, and employment in large enterprises. According to google. com term, RPA is defined as mimicking human actions to perform a sequence of steps that lead to meaningful activity, without any human intervention is known as Robotic Process Automation. As RPA emerges as a software - based solution to automate rules - based business processes we can automate windows applications, java based applications, browser - based applications, mainframe applications as well as Citrix - based applications, but along with that we also encounter some challenges if frequent changes are made in applications by application developer we need to configure our bot again and again. The second issue is that task that requires judgment and creativity are difficult to automate. We get solutions for the above challenges to the next level of automation is Intelligent Process Automation (IPA) which is developed from RPA and AI.

The paper covers the total VI sections. Section II of the paper shows the Literature Surveyed for RPA. Section III describes the technology of Robotic Process Automation, the RPA development life cycle, its scalability for use, along with its benefits and drawbacks. Section IV in the paper explains the use of RPA for different Business Organizations. Section V defines the Future Scope for RPA, whereas Section VI of the paper presents the Conclusion of our study.

2. Literature Survey

Various authors have presented their studies. Some are mentioned here. To implement RPA, the business needs to first analyze the requirements and decide on if the process can be automated or not so initial process analysis IPA should be done. IPA consists of existing process definition, and business benefit in terms of full - time equivalent (FTE - unit that indicates the workload of an employed person) **Author Nina Ilo's** aim of his study was to investigate possibilities for robotic process automation usage. This thesis was to get a clear picture of how Company X Oy can implement robotic process automation. [1]

Author Mohammed Alfandi investigated the quantitative and qualitative results of RPA implementation in different industry sectors such as the telecommunication sector, power & utilities, insurance companies, bank, and the healthcare sector. Therefore, organizations from different industry sectors or Academia can check the benefits of RPA implementation in the same/similar sector. He found that organizations that used ROI (Return on Investment) as a measure reported positive results. [2]

Author Federico Andrés Liévano - Martínez & Javier Dario Fernández - Ledesma The proposed methods illustrate how to implement RPA projects according to different organizational structures. In which they describe the robotic process life cycle. [3]

Author Komal K. Lahane*1, and Ankita A. Sutar They had described how robotics process automation is used in healthcare. In these, how the system can work automatically such as to maintain balances between an increasing number of patients and reduce paperwork and insurance process. They also discuss the global robotic automation market by services. [4]

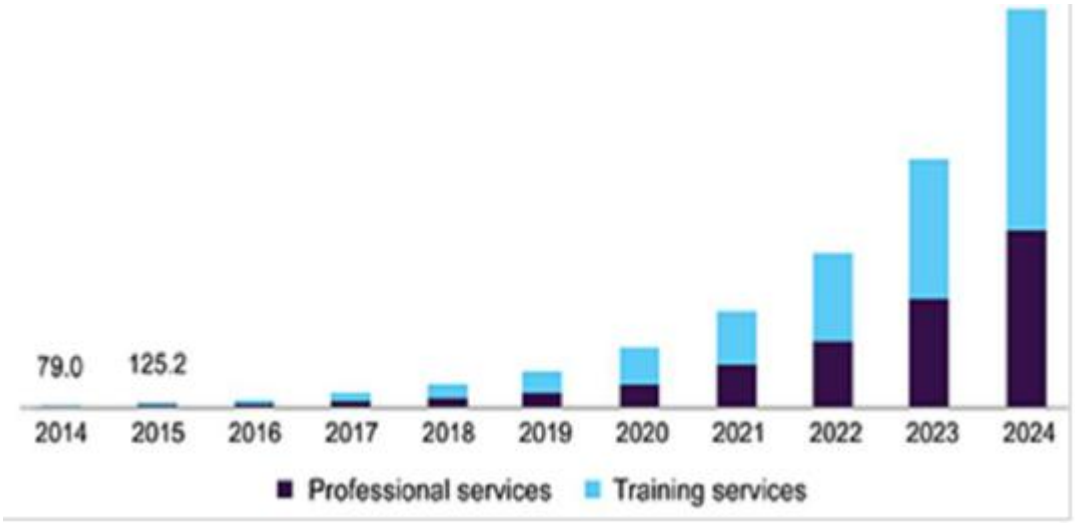

Figure 1: Global Robotics Automation Market by Services 2014 - 2024 in (USD Millions)

Author David Schatsky, Craig Muraskin, and Kaushik Iyengar Deloitte University Press defines the benefits of cognitive automation and highlights the potential to go beyond basic automation to deliver business outcomes such as greater customer satisfaction, lower churn, and increased revenues. They also state that deploying cognitive tools via bots can be faster, easier, and cheaper than building dedicated platforms. By "plugging" cognitive tools. [5]

Capgemini's feedback on RPA implementation in this report state that Capgemini in - house robots have processed 1, 5 Million transactions since 2015, equivalent to 200 employees "Process design is more relevant to the ROI than the technology used" Robotic Automation tools are up to 65% less expensive than offshore - based fulltime employees. [6]

3. Robotic Process Automation

RPA automates already existing tasks we do not need to make any changes in the current system. RPA is highly scalable means it will perform one or a thousand tasks with the same accuracy. Now a day's different tools are available to create a robot. Some of them are Automation Anywhere, Pega, UiPath, BluePrism, and Workfusion all follow agile methodology. User stories are created by using a use case. A user story is the smallest unit of work that contains a simple description of software requirements. In the sprint planning meeting selection of user stories are done. The selection of user stories for the current sprint is based on team capacity and the priority of user stories. One story point is of 8 hours. Suppose one sprint contains five user stories. So for one sprint, approximately 40 hours are required. Below are the steps in the Robotic Process Development life cycle

steps 1. **Identify the appropriate process to be automated/Requirement gathering** – Even though in theory all processes can be automated some will be easier than others. It is best to find a process that is repetitive, rule - based and uses structured data. Business analysts will gather clients' requirements and prepare IPA and FRQ (Functional requirement questionnaire) documents containing all business requirements.

Step2. **Analysis of Requirement** - Business analysts will plan how to fulfill the client's requirements and calculate ROI (Return on Investment). He also creates PDD (Process Design Document) based on IPA. PDD contains chunks of requirements in the form of screenshots and Annotations.

Step3. **Design** - In this step, SA (Solution Architect) will design the basic structure of automation. He prepares SDD (Solution Design Document) which consists of a solution diagram, data security & credentials.

Step4. **Development** - The developer will need to create each step the robot needs to perform and make sure they must happen in the correct order. By referring to SDD RPA developers prepare ODI (Object Design Instruction) and PDI (Process Design Instruction). ODI contains all object - related details and actions which will be going to develop. PDI contains the basic structure of our module, work queues, and environment variables that get assigned. Approval from the solution architect is needed for ODI and PDI.

Step5. **Testing** - The robot needs to be thoroughly tested to make sure it can perform in all situations. The robot needs to handle all possible exceptions. If the robot fails at any point the developer will have to make necessary changes before moving the robot to the production environment end - to - end testing (integration testing) & user acceptance testing must be done. The testing team prepares TCD (Test Case Document) after the completion of testing.

Step6**. Release or launch** which makes the robot available for the end user.

Step7. **Maintenance and Support** in that step internal controller team is monitoring the RPA solution in the production environment taking care of post - deployment issues. Suppose an application has been deployed and is being used, if there is any bug that will be handled by the maintenance team.

With the help of RPA tools, we can spy on the target application. By spying, we can identify the elements in the application. RPA provides us with different spying modes these are Win 32 mode, Browser Mode, UIA mode, Region mode, and Active Accessibility mode. Whenever we have very fewer elements on the application or very fewer attributes available for a specific element on the application then we are calling it a thin client application example: in Citrix based desktop/application/PDF, there we need to use global send keys and event as a text input method. We can

also schedule our robot so it can execute processes at specified times and repeat their execution at various intervals.

The advantages and disadvantages of this technology from the literature can be listed as follows. RPA - Advantages:

1) RPA is more reliable than humans. It reduces time and human effort.
2) It's not taking time off they are consistent and available 24/7
3) It's highly scalable it improves efficiency. It reduces cost and improves productivity.
4) Empowers business users and frees up IT resources. Employees can participate in more value - added activities.
5) Improved auditing and reporting for compliance.
6) Robot implementation has a quicker return on investment than classic automation.
7) The use of RPA improved employee and customer satisfaction.
8) RPA is enterprise - safe. RPA is a robust platform that is built to meet enterprise requirements for security, scalability, and audit ability.

RPA - Disadvantages:

1) Commercial versions of available PRA tools are costly so small businesses cannot afford them.
2) Choosing the tool is the easy part but picking the right implementation partner might be more difficult. The right partner needs real subject matter expertise and prior experience with the tools.
3) Frequent change in the requirement. Frequent requirement changes took a lot of effort and time.

a) Industries Benefiting From RPA

For many enterprises, RPA has emerged as a best - fit alternative to making huge IT investments to make business processes more efficient. Insurance, Retail, Banking, and Financial Services, Healthcare, Government Services, Manufacturing are the sectors where employees are doing the same repetitive and boring tasks daily. So they are mostly making mistakes, they are not accurate and manual processing is also time - consuming. So automating these processing is more beneficial to above listed industrial sectors. [7]

b) Future of RPA

Many businesses now understand that the growth of the business is possible through the use of software robots. Now a day's scope of RPA is increasing day by day features are getting added so previously no suitable task can be done with RPA due to advancements in tools. Robots can now be configured to interface directly with applications through pre - existing application programming interfaces. (APIs)

Adding features of cognitive tools increases the new level of automation technologies in the areas of data capture, pattern recognition, and decision support [8]

4. Conclusion

Robotic computer programs are in a position to perform the work previously done by people. Robotic automation can be deployed in a relatively short period measured in days and weeks. Thus RPA seems to be the future of all growing business organizations.

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