

An Overview on Robotic Process Automation (RPA)

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Abstract: Robotic Process Automation (RPA) which emerged in the early 2000's is capable of handling large amount of data and performs actions on data at a faster rate to produce optimum solution. Industries, Banking Sectors, Insurance Companies, Supply Chain Managements, Customer Service Departments, Accounting, Financial Services, Healthcare and Human Resources Sector's rely upon making use of the RPA technology which is more reliable, gives better customer services, improves efficiency and cost effective.

Keywords: Data, Process, Automation, Optimization, Services.

I INTRODUCTION

Robotic Process Automation (RPA) is a software technology which is capable of creating an efficient environment in the digital platform, where in the software manages all kinds of activities. Intricate tasks such as providing security over a network, encrypting/decrypting large amount of data or information which are unmanageable by humans 24/7 will be optimally handled by the RPA once it is designed, developed and tested on a real time application. The tasks such as operational activities in sales, procure to pay, portal queries, data extraction, reconciliation, price comparison, data management, payroll management, auto-generation of reports, customer service operations are competently obtained as and when required. RPA is a powerful tool which always tries to give the best using the available resources. Efficacy is attained by nullifying errors during the automated process. RPA is a dynamic, sophisticated system which creates a functional error free environment, this feature makes the tool to be used by several organizations. With the introduction of RPA in organizations, skilled humans got rid of performing repetitive tasks. RPA is an IT asset, feasible, existing system that can handle any kind of technological complexity.

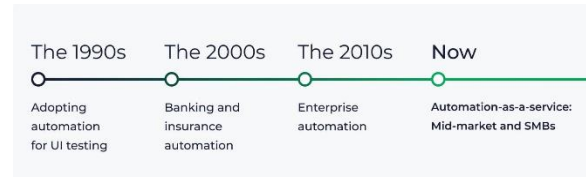


Figure1[7]

The evolution of RPA was in the year 1990. Initially, the systems adopted automation for User Interface (UI) testing. After a decade of its development, RPA was active in Banking and Insurance Automation, further it was used for Enterprise Automation and in 2020's it is dynamic in Automation as Service: Mid-market and Small and Medium Businesses (SMBs). The SMBs should not expect RPA to be an instant fix, the business firms should analyze whether RPA is the best fix for their business. Before implementation of RPA, checking for realistic appraisal of feasibility is necessary. If the goals are satisfied after the analysis and feasibility checks, start the RPA implementation process. The SMBs have observed failure rate during implementation of RPA. As per the survey of Business Today in 2017, the failure rate of implementing RPA was between 30% to 50%.

The rest of this paper is organized as follows. Section II will be the Literature Reviews. Section III describes the stages involved in RPA. Section IV briefs about RPA tools. Section V designates the conclusion.

II LITERATURE REVIEW

This section reveals a brief knowledge about the research papers on Robotic Process Automation. [1] The paper Robotic Process Automation mandates about how in a non-manual way tasks can be completed. RPA is a sub set of Process Automation. The authors here have discussed about Robotic Automation (RA) which is the sum of Robotic Desktop Automation (RDA) and Robotic Process Automation (RPA). Robotic Process Automation introduction in organizations reduces overall cost,

increases productivity, improved customer service, higher accuracy and so on. Authors here have elaborated on the challenges faced during RPA adoption such as pace of transformation, availability of skilled people, deprived operating model, data consumption, requirement of constant digital work force etc. [2] The paper RPA based digital marketing robot discusses the Main Framework, Custom URL Framework and Keyboard Frameworks which helps robots to decide what to post on the social media platform. The RPA system performs various automated tasks in the field of digital marketing. RPA tools such as UiPath Studio, Microsoft Visual Studio, IFTTT (If This Then That) web platform, web browsers are the software's which can be used to make RPA work in Real Time Environment. The paper clearly shows the configuration of Windows Application created with UiPath Studio, configuring IFTTT with UiPath Studio Robot, operation of the Robot, posts on social media platform by a robot. [3] The paper Robotic process automation for recruitment process discusses RPA technology which has smooth functioning of Candidate Relationship Management (CRM). The RPA enables in finding suitable candidates following job matching criteria. The process of robot helps recruiters to eradicate unqualified candidates for a particular job. RPA communicates with the candidates via social media platforms such as WhatsApp, Skype etc. The paper emphasises on the integration of robots and humans in handling complex issues to provide the best output. Deloitte's human capital trends report expresses that 47 % of the organizations are using automation. [4] The paper, Overview of Robotic Process Automation (RPA) and its application in Industry discusses RPA structure which includes Process Developers, Robot Manager, Robot, Users and Applications. Three service models i.e., Centre of Experience, Licensing and Service Management are the essentials for an industry which indulges in RPA. The comparative study of RPA platforms such as UiPath, Automation Anywhere, Blue Prism, Microsoft, Work Fusion, Pegasystems, Appian and Service trace, their advantages, description are particularized. [5] The paper, Social Innovation in Education System by using Robotic Process Automation (RPA) describes that Enterprise Resource Planning (ERP), Customer Relationship Management and spreadsheets are used in manual processing in business organizations. The

parameters: cost, execution time decreases, whereas accuracy, security and confidentiality increase when RPA is adopted. RPA can be applied in IT, Supply Chain, HR, Finance and Accounting, Sales and Marketing. The authors have elaborated the process involved in result entries in excel by BOT. The paper has made a comparative study among employee and BOT. The result analysis shows that using RPA automation tool, time taken to complete the result analysis process by BOT is 94.44% less time when compared with manual process. [6] The paper, A Study of Robotic Process Automation Among Artificial Intelligence/ Robotics which includes Reasoning, Interpreting, Generating, Sensing and Effecting. The Robot controls are Drum controller, Air logic controller, Programmable controller, Micro process-based controller and Minicomputer-based controller. The Programming Methods to teach a robot are Lead through programming, teach pendant programming and Textual programming using computer terminal. The robot sensors are of two types contact type and non-contact type. Force sensors, Torque sensors, Touch sensors and Position sensors belonged to contact type robot sensors. Electro-optical imaging sensors, Proximity sensors and Range imagine sensors belonged to non-contact type robot sensors. The advantages of RPA are Continuous service, Scalability, Openness, Time competent, Greater throughput and Removal of human errors. The disadvantages of implementing RPA are financial expense, Lack of technical ability and Major change. At present RPA exists in Banking industry, HR and business support, Intelligent process automation (IPA).

III RPA DEVELOPMENT STAGES AND ITS FUNCTIONALITIES

To implement digital work force in efficient manner, RPA systems are setup. Initially, Assisted RPA evolved which was capable to executive activities with human intervention, then Unassisted RPA emerged, here, robots replaced human intervention, in the next stage Autonomous RPA progressed which encompasses Robotic Process Automation (RPA), Cognitive Automation (CA), Artificial Intelligence (AI), and Machine Learning (ML), the subsequent step in development is Cognitive RPA with natural

language processing, data mining, semantic technology, text analytics and machine learning[8].

Life Cycle of RPA Project

The six stages of life cycle shown in figure 2 can deploy automation in organizations or in other web activities and make platform digital ready without anthropological involvement, this readiness results in up to 80% reduction in Average Handling Time (AHT), up to 90% reduction in Average Response Time (ART) and Improved Return on Investment (ROI). The stages include identifying the problem, understand/ analyze the needs, designing a model to resolve the issue, using the design, developing the software, testing the built software system with all types of test cases and finally implement the entire developed automation system.

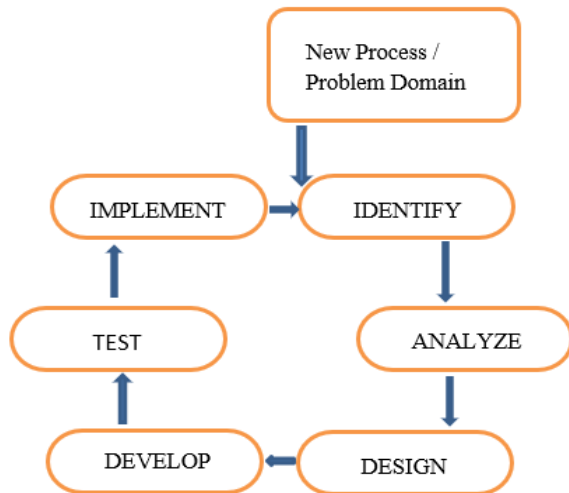


Figure 2: RPA Life Cycle

IV ROBOTIC PROCESS AUTOMATION (RPA) TOOLS

RPA tools are ready to use software which minimizes human tasks. These tools have Rich Analytical Suite, Security, Simple Bot Creation Interface, Source Control, Hosting and Deployment Option, Rules-Based Exception Handling, Debugging, Less Script or Script Less Automation, Seamless Integration, Optical Character Recognition (OCR) and Actionable Intelligence. Table 1 shows the rating given by users on different RPA tools.

RPA Tool	Ratings
UiPath	1966
Automation 360	1510

Blue Prism Intelligent Automation Platform	701
TruBot	205
Automation Edge	132
Power Automate	125
Appian RPA	104
IBM RPA	83
WorkFusion Intelligent Automation Cloud	81
Kofax RPA	71

Table 1: Top 10 RPA Tool Ratings by Users [9]

V CONCLUSION

To conclude this paper, after reviewing several articles, the core functionalities of RPA are 1. Bot interacts with other systems via screen scraping or Application Interface Programming (API) integration, 2. Bot uses decision system to determine its actions based on inputs it gathers from other system and 3. Bot includes an interface to program the bot. [10]In 2023, RPA will divert to low-cost RPA and hyper-automation systems, Increased adoption of managed RPA, rising numbers of RPA Centre Of Excellence (COE), Semantic Automation, Adoption of Robotic Process (RP) among Small and Medium-Sized Enterprises (SME) adopters, RPA as a Service (RPAaaS) will become mainstream, More RPA-driven Managed Service Providers (MSPs), Intelligent Systems, Automation-Related Acquisitions and RPA will take over Enterprise Resource Planning (ERP).

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