ROBOTIC PROCESS AUTOMATION

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ABSTRACT

RPA, or Robotic Process Automation, is software that mimics the steps a human takes to complete rules-based, repetitive tasks. The robot carries out work with speed and precision, utilizing the same applications your employees use every day. In traditional automation, all the actions are primarily based on the programming/scripting, APIs or other ways of integration methods to the backend systems or internal applications. In distinction, RPA automates software that can migrate the work from the human to the computer which can stop paying humans to do work ripe for automation, faster front and back office transaction processing, near "Instant On" integration at the lowest cost, optimization of User Interface to drive long call/transaction times down, accelerate digital transformation objectives, eliminate errors thereby improving productivity by making workers smarter. Within digital transformation, which is continuously progressing, robotic process automation (RPA) is drawing much corporate attention. While RPA is a popular topic in the corporate world, the academic research lacks a theoretical and synoptic analysis of RPA. The Robotic Process Automation (RPA) is a new wave of the future technologies. Robotic Process Automation is one of the most advanced technologies in the area of computers science, electronic and communications, mechanical engineering and information technology. It is a combination of hardware and software, networking and automation for doing things very simple.

Keywords: Robots, RPA, Intelligent Process Automation, Concept of Bots, Software Robots.

1. INTRODUCTION

Robotic Process Automation (RPA) is being leveraged by many businesses around the world in a wide variety of sectors to provide a vital competitive advantage in business process automation. IT Automation is enabled by software including APIs, scripts, jobs, schedulers, programs, events and a broad range of automation tools. With the advent of Cloud Computing, resources are exposed by APIs and accessible in real-time. When combined with automation toolsets, automated application build & releases, workload, server & infrastructure resources, configuration management updates are now feasible. On-premise environments are pressured to catch up to the speed, flexibility, provided by Cloud environments.

Automation toolsets are being used to enhance on premise environments. Heuristic automation leveraging Machine Learning is an emerging class of IT Automation. However, currently there are few vendors with niche offerings and an increased maturity is forecasted over the next 3-5 years. To understand more on IT automation, Automation refers to a non-manual way to complete a task. The term takes on different meaning based upon the context and situation. Within IT there are 5 broad types or building blocks of automation and associated tasks like Process Automation, Service Automation, Workload Automation, Infrastructure Automation, and Application Build & Release Automation. Robotic Process Automation (RPA) is a subset of Process Automation. RPA is an application of technology which is programmed as a "robot" to capture and interface with existing applications for processing a transaction, manipulating data, triggering responses and communicating with other digital systems. RPA intends to assist or remove a human activity, using software to carry out tasks. RPA tool can be triggered manually or automatically, move or populate data between prescribed locations, document audit trails, conduct calculations, perform actions and trigger downstream activities.

Robotic Automation is a sum of two parts:

Robotic Desktop Automation (RDA)

Used for personal robots for every employee, front office (call center, retail, branches) and back office, Toolbars, Wizards, UI enhancements and Task automation

Robotic Process Automation (RPA)

Unattended robots replicating 100% of algorithmic work, back-office

operations, repetitive in nature, offload front office work, 100% improvement across smaller subgroups RPA allows organizations to implement automation in a non-invasive way, which makes RPA unique among other types of automation. It can also reduce the need for constant IT involvement and application development.

Overall Cost Reduction – Automates processes by closing data integration gaps without changes to underlying technology investments. Lowers the cost of operations and increase customer satisfaction. The average cost of implementing and running a robot is much less than the equivalent full-time employee costs and decreases the large scale deployment. Speed and Productivity – RPA is typically 2X-3X faster than humans even if robots work at the same pace as humans they can work round the clock, unlike humans.

Scalability and Flexibility – Robots can easily be scaled up and down to handle demand fluctuations and seasonal variances.

Accuracy and Compliance – Robots work to 100% accuracy levels and enable compliance avoiding human error saves costs. Reduction in security vulnerabilities from improved software and increased configuration standardization.
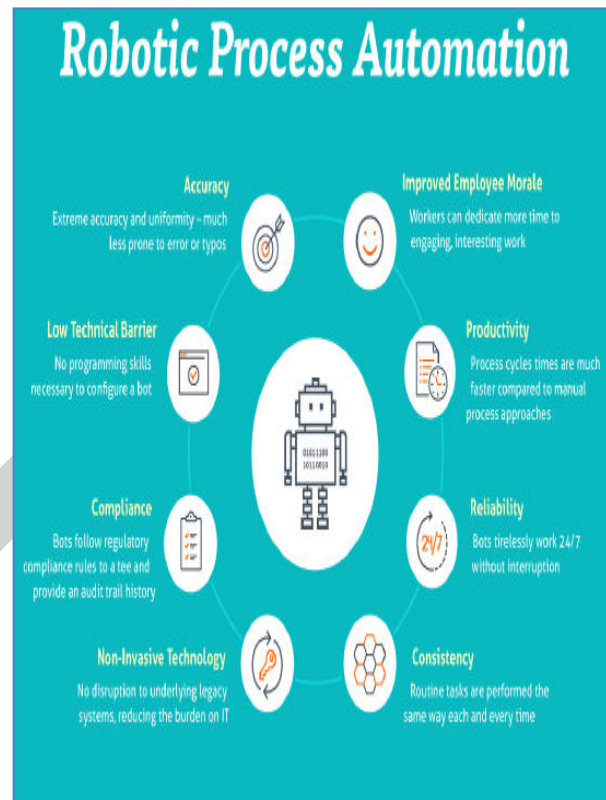

Figure 1 RPA Structure

2 LITERATURE REVIEW

A literature review and tool analysis, we propose – in a holistic and structured way – four traits that characterize RPA, providing orientation as well as a focus for further research. Software robots automate processes originally performed by human work. Thus, software robots follow choreography of technological modules and control flow operators while operating within IT ecosystems and using established applications. Ease-of-use and adaptability allow companies to conceive and implement software robots through (agile)

projects. Organizational and IT strategy, governance structures, and management systems therefore must address both the direct effects of software robots automating processes and their indirect impacts on firms.

The automation of robotic processes has been experiencing an increasing trend of interest in recent times. However, most of literature describes only theoretical foundations on RPA or industrial results after implementing RPA in septic scenarios, especially in _Nance and outsourcing. This paper presents a systematic mapping study with the aim of analyzing the current state-of-the-art of RPA and identifying existing gaps in both, sciatic and industrial literature. Firstly, this study presents an in-depth analysis of the 54 primary studies which formally describe the current state of the art of RPA. These primary studies were selected as a result of the conducting phase of the systematic review. The result of the study concludes that there are certain phases of the RPA lifecycle that are already solved in the market. However, the Analysis phase is not covered in most tools. Finally, some future directions and challenges are presented. In this light, the research manuscript investigated the secondary data - which is available in goggle, academic and research databases.

A very few empirical articles, white papers, blogs and were found RPA and came across to compose this research manuscript. This study is exploratory in nature because of the contemporary phenomenon. The keywords used in searching of the database were Robotic Process Automation, RPA, Robots, Artificial Intelligence, Blue Prism. The study finally discovered that Robots and Robotic Process Automation technologies are becoming compulsory as a part to do business operations in the organizations across the globe. Robotic Process Automation can bring immediate value to the core business processes including employee payroll, employee status changes, new hire recruitment and on boarding, accounts receivable and payable, invoice processing, inventory management, report creation, software installations, data migration, and vendor on boarding etc. to name a few applications. Besides, the Robotic Process Automation has abundant applications including healthcare and pharmaceuticals, financial services, outsourcing, retail, telecom, energy and utilities, real estate and FMCG and many more sectors. To put in the right place of RPA in business operations, their many allied technologies are working at the background level, artificial intelligence, machine learning, deep learning, data analytics, HR

analytics, virtual reality (second life), home automation, block chain technologies, 4D printing etc. Moreover, it covers the content of different start-ups companies and existing companies - their RPA applications used across the world. This manuscript will be a good guideline for the academicians, researchers, students, and practitioners to get an overall idea.

3 METHODOLOGIES

Challenges in Traditional RPA Adoption

❖ Pace of change – Most companies are experiencing a typical two-year journey to make any real progress with automation.

❖ Skilled People – Limited availability of skilled resources – domain + technology against the market demand.

❖ Governance – Poor/Inefficient operating model of governance in managing and mitigating risks.

❖ Data intake – many companies are inundated by the challenges of getting started that they overlook data architecture, intake and coding.

❖ Industry expertise – As automation program evolves, the path for what should be automated becomes less clear and more industry-specific.

❖ Digital Workforce – Many companies don't plan for the maintenance of resources required when automation breaks or underlying systems changes.

❖ Technology overhead – one especially large obstacle is the number of automation vendors and the larger-than-life claims some intake 93% of organizations say they are not fully prepared to handle the issues arising out of their automation journey. – Forrester.

RPA Effectiveness Test

The vital role of Robotic Process Automation is to offer improved customer experience and operation excellence by increasing performance, efficiencies, and agility in the process. However, the integration of RPA requires proper planning beforehand to ensure processes are fit for robotic automation. Consider below checklist for ideal automation candidates:

❖ Rules-based and repetitive?

❖ Accesses structured data?

❖ High volumes or fluctuations in volume?

❖ Utilizes a user interface?

❖ Performed by more than 1 FTE?

❖ Stable (not changing often)?

❖ Has business value?

The total value of automation goes well beyond financial impact. Consider the below factors when determining ROI:

- ❖ Optimized operation costs
- ❖ Reduced cycle time
- ❖ Increased quality: rework, errors and variance
- ❖ Total flexibility: timeliness, scalability, seasonality
- ❖ Reduced penalties: payment interest, government
- ❖ Greater compliance: onshore, extremely detailed audit logs
- ❖ Better insights: real-time visibility into work and outcomes
- ❖ Improved customer experience

RPA Implementation Approaches

Robotic Process Automation (RPA) tools can help organizations optimize business efficiency and effectiveness of their operations much faster, improves the accuracy of execution by reducing human interventions and lowers the overall cost. With the use of RPA tools, Organization can use the saved bandwidth towards more useful activities. There are many challenges faced by organizations during RPA implementation such as lack of skilled resources, pace of change, technology overhead. A key to the successful RPA implementation is in finding ways to overcome these obstacles

by following a proven approaches like stated below:

- ❖ Project identification and prioritization: It is very critical to identify a suitable project that qualifies for business process automation, develop the right strategy, define timelines and skilled resource alignment. Prioritize the processes based on the current resource spent, automation efforts and complexity of the solution.

- ❖ Use Case identification and scoring: Determine the suitable business process for intelligent automation and prioritize these processes based on metrics. Each of the criteria will have its own positive and negative impacts. Based on the derived scoring and assignment criteria, organizations will be able prioritize the processes for automation.

- ❖ Use Case development: By focusing on business case which is fit for RPA adoption and then deriving the ROI analysis would help organizations build a strong case towards RPA journey. RPA assessment should also include strong governance, leveraging best

practices and ensuring the reusability of the components.

❖ RPA development and operations: RPA development involves basis SDLC (system development life cycle) steps such as design, develop, test, deploy and process leaning. Defining process definition documentation, solution design, bot creation and scheduling for different use cases.

4 ALGORITHMS
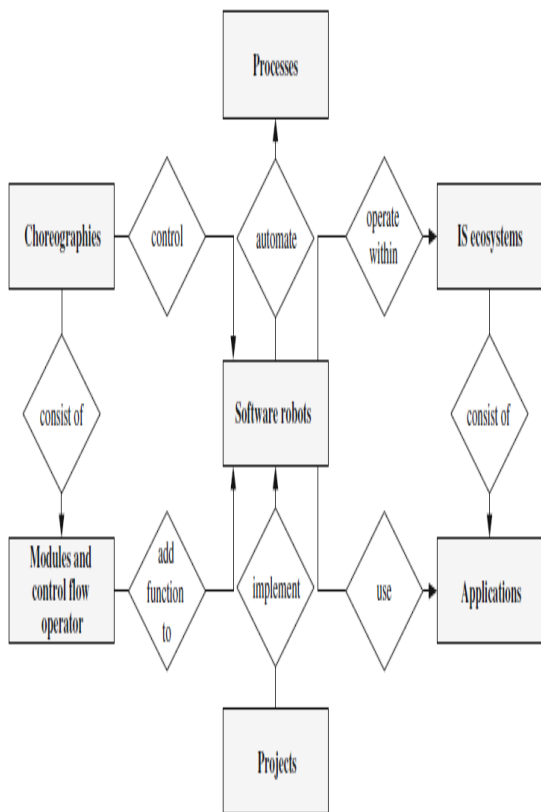

Figure 3 Algorithm Process

Figure 2 The nature of robotic process automation

1. Accuracy, Productivity, and Quality

Robotic process automation allows for large, data-heavy or repetitive tasks to become automated.

They can also lead to people losing focus and interest in their job.

This can slow down productivity and harm production standards.

Like other forms of automation, robotic process automation also helps to reduce error rates.

Using automation on the production line to do repetitive tasks can also help to maintain product quality standards.

Additionally, automation allows workers to focus on more engaging or fulfilling tasks.

This can improve job satisfaction and productivity levels.

2. Scalability and Flexibility

RPA is a scalable and flexible enterprise platform.

This means that instead of struggling to automate your entire operation in one go you can do it in stages.

This allows you to start in a department that is ideal for implementation before rolling out the system into other areas.

This allows you to identify potential future problems and solve them before they become major issues.

This steady approach to automation means that employees are able to gradually get used to the idea.

Consequently, implementation can be smoother and problem-free.

3. Security

Automation allows for systems to become more secure.

Applications such as encryption and secure access mean that systems are less prone to hacking or becoming infected.

As a result, RPA can make your systems more secure and more effective.

4. Advanced Analytics

As we have highlighted RPA allows for the digitization of repetitive processes.

However, it can also be used to sort through large amounts of data.

Additionally, RPA will present this data, once analyzed in an organized or structured manner.

This means that it is easily accessible and useable.

5. Cost Savings

There are a number of ways in which RPA can help to save your company money.

Not only does automation cut down on human error it can improve productivity.

As it is an automated application RPA can function constantly with no downtime required.

Also, by automating repetitive tasks, human employees can focus their time on more productive tasks.

This can improve productivity without the need to recruit new staff.

6. Improved Customer Service

Eliminate human errors to improve customer satisfaction

7. Improved Compliance

Compliance requires considerable financial and human resources. It is a complex and data-heavy process. In areas such as anti-money laundering and 'Know Your Client' operations, RPA could be hugely beneficial.

5 CONCLUSIONS

The successful implementation of RPA it cannot be a single functional ownership, instead it must be a more collaborative approach between IT and business. Organize all the initiatives around true enterprise strategy around optimization, efficiency, audit, compliance for better visibility to create a better customer experience. RPA and automation tools are a component, piece of a hybrid toolset that will get the organization towards the transformation objective. This is a technology that enables the business to achieve greater outcomes and both IT & Business have to work closely together. With software robots autonomously executing their choreography uninterruptedly, quickly, flawlessly, and traceably while at the same time being easy to implement at relatively low costs compared to traditional process automation, RPA comes along with both qualitative and quantitative objectives. Organizations may apply RPA for one or more objectives such as process

performance, efficiency, scalability, audit ability, security, convenience and compliance. The objective of this research is to offer a systematic review of both the academic literature and the available market solutions in the RPA field. For the academic scope, this work has been carried out following widely accepted processes in the field of research, thus granting high scientific rigor to the results obtained. Results showed that: (1) there is a high interest of the scientific community in this area and (2) there is an increasing tendency regarding publications related to RPA.

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