

SURVEY ON ROBOT PROCESS AUTOMATION APPLICATION IN VARIOUS INDUSTRIES

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Abstract: The Robotic Process automation (RPA) plays a vital part in the digital transformation scheme in maximum number of the organizations as they provide numerous of benefits over the conventional automation solutions that are out dated. The RPA provides an increased accuracy and productivity in the industries ensuring the cost savings and the reduced resource utilization with the technical barriers that are non-invasive. The paper presents the survey on the application of robot process automation in various industrial processes and the over view of the benefits in using the RPA.

Keywords: Artificial Intelligence, Machine Learning, Robotic Automation Process, Industrial Developments and Benefits

1. INTRODUCTION

The RPA enables the organizations to automate the works replicating the performance of the human beings, through various applications and the systems. The robot does not incorporate any complicate infrastructure and just extends interaction with the existing information technology unlike the traditional automation system.

It imitates the monotonous process of the human being s by employing the software robots that are designed to capture and record the applications in order to execute transactions, compute data, generate responses and interconnect among various digital systems.

The RPA engages both the software and the strategic approaches to robotize the computation and effectively design process respectively by applying the script, macros and the algorithms to the process. The RPA automates the

workflow, back office process, infrastructure in an organization substituting the human beings engaged in the repetitive process such as the clerical tasks etc. They modify the company environment by employing the virtual worker instead of the human workers, and ensure 100% error free productivity compared to the humans who can show only an average production of 60 %, the change in the regular process can be just be intimated by few line changes in the software code. The tabulation below in the table.1 provides the comparison between the conventional automation and the robotic process automation.

Parameter	Conventional Automation	Robot Automation
Goal	Minimizes the execution time	Minimizes the human power
Task	Automates the monotonous Test cases alone	Ensures automation in all areas of an organization
Number of users	Limited	Can be accessed by all
Technical strategy	Aids only a limited amount of soft ware	Aids a wide array of software environment
Participation	Behaves as a virtual assistant	Behaves as the virtual workforce
AI integration	Executes only the code fed in	RPA integrates AI to provide a human like operation
Coding	Specialist with coding knowledge is required	Coding knowledge not required
Implementation	Automates the product	Automates products and services
Application	Employed in the equality analysis , UAT environments	Employed in production units, front office, back office etc.

Table.1 Difference between the Conventional automation and the RPA [22]

Basically the RPA aims in developing a virtual environment that imitates the human actions; it performs high-volume repeated tasks with high accuracy compared to the humans with an automated report generation, validation and auditing, debt management, production management, quality assurance, data migration, filling in the gaps, revenue forecasting etc. the figure.1 below provides the procedure involved in the implementation process of the RPA

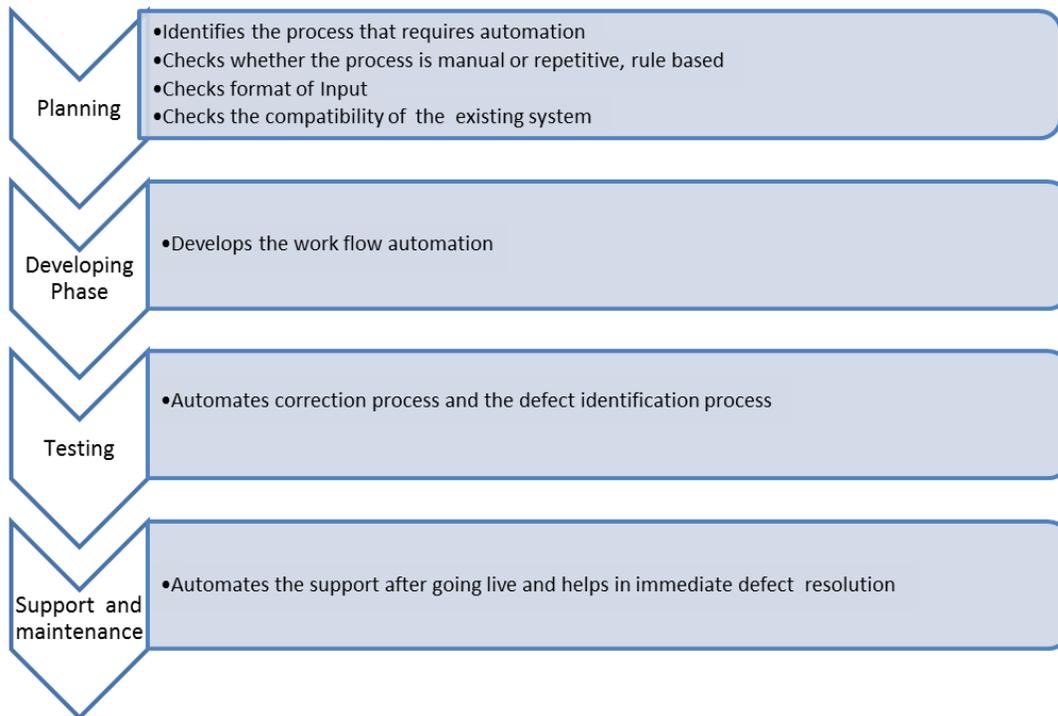


Fig.1 Implementation Process of RPA

The survey in the paper presents the application of the RPA in various industries and the benefits enjoyed by substituting robots instead of the humans.

The paper organized with the literature survey of the robotic process auto automation in section 2, the overview of the benefits of the RPA in section .3 followed by conclusion in the section .4

2. LITERATURE SURVEY

The section presents the literature survey about the association and the integration of the RPA in the various existing industrial process. The table.2 below presents the survey of the industrial applications automation by employing the Robotics.

Robotics in industries	Authors description	Uses	Advantages
Automobile industry	Smys, S., and G. Ranganathan [1]	Sensing , control , picking, dropping	Reduces human power , enhances accuracy , speed
Drilling industry	Boyadjieff [2]	Performs drilling , analysis obstacle and limitations	Reduces human physical stress, reproduce best crew on rig
Protection resource	Vijayakumar, T [5]	Flexible robotic electronic skin	Protects the skin from unwanted radiations in the industries
Medical industry	Manoharan [9], Bhatnagar, Nitu. [14]	Surgical robots , RPA in drug discovery, Drug formulation process, etc.	Eradicates human errors, allows self correction and automation , handles tremendous amount of data .
Logistics	Karabegović, I., E [10]	Service Robots	Reduced processing time
RPA + Machine Vision	Luis Pérez [11]	Autonomous robots	Ensures accuracy , safety, processing time
Construction	Chu [12], Tay [13]	Robots in building construction, road construction and maintenance	Over comes inefficiency in the labor intensive works
Telecom Industry	Schmitz [15]	RPA as enabler	Automatic transaction , careful management, reduce d cost
Business Organization	Ansari, [17] Madakam, Somayya [16]	Moving physical robots	Accuracy in performing tasks
RPA in purchasing	Muurinen, [18]	Soft ware Robotics	Cost effective , performs high value task

Table.2 RPA in Industries

3. OVER VIEW OF BENEFITS OF RPA

There are several benefits in employing RPA in the industrial process. The figure.3 provides the overall benefits in employing The RPA in the business and the industrial process.



Fig.2 The RPA overall Benefits [21]

The RPA in the industrial process reduces the pain and the cost involved in performing the repetitive jobs, enhances the customer and employee satisfaction, by employing the machine learning applications, chat bots, and the

providing the agent assisted self-services, and provides a assistance to agents enhancing their productivity and allowing more time for them to focus on customer experience. Increases the quality and the efficiency of the work done, minimizes the error in turn increasing the accuracy. The table .3 below provides the benefits and the disadvantages of the RPA in the industrial and the business process.

Advantages	Disadvantages
Automates large number of process	They are limited to the speed of the application
Cost are reduced significantly	Needs reconfiguration even for simple changes
Saves time and resources	Reconfiguration would lead to time consumption
Programming skills are not needed to configure a software robot.	Requires human supervision
Robotic process automation support and allows all regular compliance process,	
Rapid model and deployment of automation process, Effective, seamless Build & Release Management	
It increases Scalability	

Table. 3 RPA Benefits and Disadvantages

4. CONCLUSION

The robotic process automation enables the industries to automate the works replicating the human actions but with better performance. The survey presents the literature survey including the uses of the RPA in the various industries and provides the benefits of the RPA in the proceeding section, from the survey it is understood that the RPA strives to reduce the human stress and improve the accuracy in the tasks.

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