

A structured approach to implementing Robotic Process Automation in HR

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Abstract. Technological innovations are changing the industrial landscape. As technology transforms the world, the HR function needs to focus on embracing automation and other technologies that promise efficiency, service effectiveness and cost savings. Deployment of robotic process automation (RPA) can help (a) to offer better service to employees and managers (b) ensure compliance of HR processes with standards and regulations (c) facilitate rapid initiation and completion of HR processes (d) enhance efficiencies by digitizing data and auditing process data (e) improve HR productivity and cost savings by automating manual and repetitive tasks. A robust and structured approach needs to be in place to identify HR processes that can be automated using the RPA approach. In this paper the authors (a) suggest a four step approach – validation, assessment, evaluation and classification - to analyze processes and verify their suitability for automation using RPA (b) identify HR processes that has relevance for the RPA approach within the broad areas of HR Strategy, Talent Acquisition, Talent Development & Performance Management, Compensation & Benefits, HR Operations and Employee Relations (c) recommend a process for mapping HR RPA propensity. A case study is also presented for greater clarity on adoption of RPA in HR processes.

Keywords: *Robotic Process Automation (RPA), Human Resource RPA, HR automation, Human Resources technology, HR process automation*

1. Introduction: Industry 4.0 and its impact

Technological innovations – Cloud computing, Internet of Things, Big Data, Augmented Reality, Autonomous Robots, Cyber Security, Additive Manufacturing, Simulation – are changing the industrial landscape.

The shift is a game changer for the workforce across the globe. The role of the human worker is being significantly altered significantly and irreversibly. Economies and industries are moving from a workforce organized around manual labor to that organized around knowledge.

These changes expected are so dramatic that the term Industry 4.0 was coined to signify its importance. The term was first used by Germany in 2011 to describe the transformation taking place in the business value chain as a result of tectonic shifts in the technology landscape.

In his paper presented in the World Economic Forum (1) observes:



“What has come to be known as the “Fourth Industrial Revolution” is being shaped predominantly by production digitization and networking. Buzzwords such as the ‘Internet of Things and Services and ‘Cyber-physical Production Systems’ promise increased networking of autonomous and self-optimizing production machines and intelligent products which can be customized to manufacture highly individual outcomes.”

While there has been a lot of hype around Industry 4.0, there are clear indications that we are going to experience a rapid evolution of jobs as we know them. Many studies state and the impact of it is being seen already, most low skills jobs that exist currently and are built around carrying out routine tasks are likely to disappear. On the other hand new jobs will come into existence, that have never existed before.

The change is so dramatic that research by World Economic Forum indicates that nearly 70 million jobs are expected to be displaced as a result of changes brought about by Industry 4.0. Another report by McKinsey (2) states that by 2020, the world is likely to face a surplus of 90 million low skill jobs and a shortage of about 38 to 40 million jobs.

2. HR automation in the age of Industry 4.0

As is obvious in the discussion above on Industry 4.0, technology will be the biggest workplace disruptor. As technology transforms the world, HR should focus on embracing automation and other technologies that promise efficiency, service effectiveness and cost savings. The singular focus of such technology deployment should be driving value through talent.

For reasons difficult to fathom, ensuring consistency in people processes and driving value through talent has eluded HR. And process automation offers the hope that this can be achieved with use of technologies that include intelligent process automation, artificial intelligence and other related new technologies. Deployment of these technologies can result in substantial cost savings. A study by McKinsey (3) suggests that of the typical ‘hire to retire’ tasks, current technologies can enable automation of 56 percent of these tasks with limited changes in process.

3. Robotic Process Automation (RPA)

What is Robotic Process Automation? The word “robot” conjures up sci-fi movie images of robots from ‘Star Wars’, or from ‘I, Robot’. However, robotic process automation (RPA) has little in common with hardware robots. ‘Robotic’ as applied here refers to a task that is mechanically doable, monotonous, or routine. The robot in question here is a software program. ‘Process’ refers to a set of steps in a business process that are repeatable, and hence a computer program can execute this set of steps mechanically. ‘Automation’ means the software robot or ‘bot’ that executes the process automatically.

RPA is an attempt to mimic the steps carried out by humans carrying out routine tasks or duties associated with business process management roles. BPM staff in their daily routine The Business Process Management (BPM) staff typically have multiple terminals and computers on their desks. This is because of legacy systems hosted on mainframes being accessed through monitors, Unix/Linux applications using another terminal/monitor, and typically Microsoft Excel accessed through Windows PCs. Why, even in the 21st century, are we still stuck with legacy systems from the 1970s? Why aren’t they being replaced? Firstly, most of the legacy systems are not properly documented, and the code is in arcane programming languages e.g., COBOL, which very few IT professionals are conversant with. Some of the legacy systems do not even have their source code, with just the binaries (compiled code) being

used to run them. Thus, replacement of these legacy systems is next to impossible. This has resulted in what is termed “swivel chair automation” i.e., the BPM staff swivels their chair to access multiple applications/systems/terminals/desktops on their desk, when data is dispersed over mutually incompatible IT systems. Data from one application/system needs to be keyed in to another application/system, resulting in human error.

BPM staff as part of their daily routine perform tasks such as ‘scraping’ data from the mainframe application and cut-paste into a Microsoft Excel spreadsheet, and additional data from the Unix/Linux system is also added to this, to yield a suitable reply to a customer query. In Europe, for instance, due to privacy regulations, only one unique identifier (e.g., customer ID) can be entered at a time to obtain corresponding information. This would make the life of BPM staff difficult. This is where RPA comes into the picture. Using RPA bots, a batch file can be used feed the unique identifier one by one to the application/system, and obtain the information sequentially.

In contrast to engaging BPM staff who work only for specific hours and even then require periodic breaks, RPA ‘bots’ can work typically continuously 24x7 on all days of the year. The quality of execution of the tasks also does not suffer as compared to humans performing them, as it performs repetitive tasks without any boredom. Thus, costly human errors resulting in financial losses can be obviated. One more advantage with bots is that they can scale, depending on the volume of work. Additional bots can be spawned, or even the current number of bots can take up additional workload, unlike human beings. This is especially handy during peak seasons such as during Sales, and festive occasions. The long response times typical in non-RPA contexts can therefore be avoided. The customer experience is also significantly improved.

The benefit therefore, is that RPA takes the routine tasks out of the work content of humans, and thus enables them to focus on higher quality tasks. Only the exceptional cases need to be handled by the staff. Very little programming knowledge is required to develop these RPA bots. The procedure is similar to recording and playing of macros. Bots can coexist side by side along with human staff, and this can lead to a symbiotic relationship, to the extent of some BPM staff even naming their bots!

Consider an example of the application of RPA in Human Resource (HR) departments. The HR team have to perform the task of onboarding new staff. This involves creating user IDs for the new employee on several systems and applications, which is a routine and repetitive task. Such tasks are easily be automated, with a “bot” for onboarding the new employee.

BPM also encounters image problems in developed countries, as some of the BPM staff were encouraged to sport Western sounding pseudonyms, develop an accent, and even go to the extent of picking up current affairs of their client’s nation, so as to engage in small talk to win the trust of the client. There were also cases where sensitive information such as Social Security Numbers (SSNs) were compromised when employees left the BPM company in question. All of this can be avoided if RPA is deployed.

At present, conversational platforms are being integrated with RPA, so that the bots can speak in languages other than English even. RPA is best at handling structured data. The next step in evolution of RPA is cognitive RPA, where Artificial Intelligence (AI) is used as well. In this scenario, RPA can deal with unstructured data too. Optical character recognition (OCR) is typically integrated with RPA at this stage, so that hand written documents are scanned and converted to text.

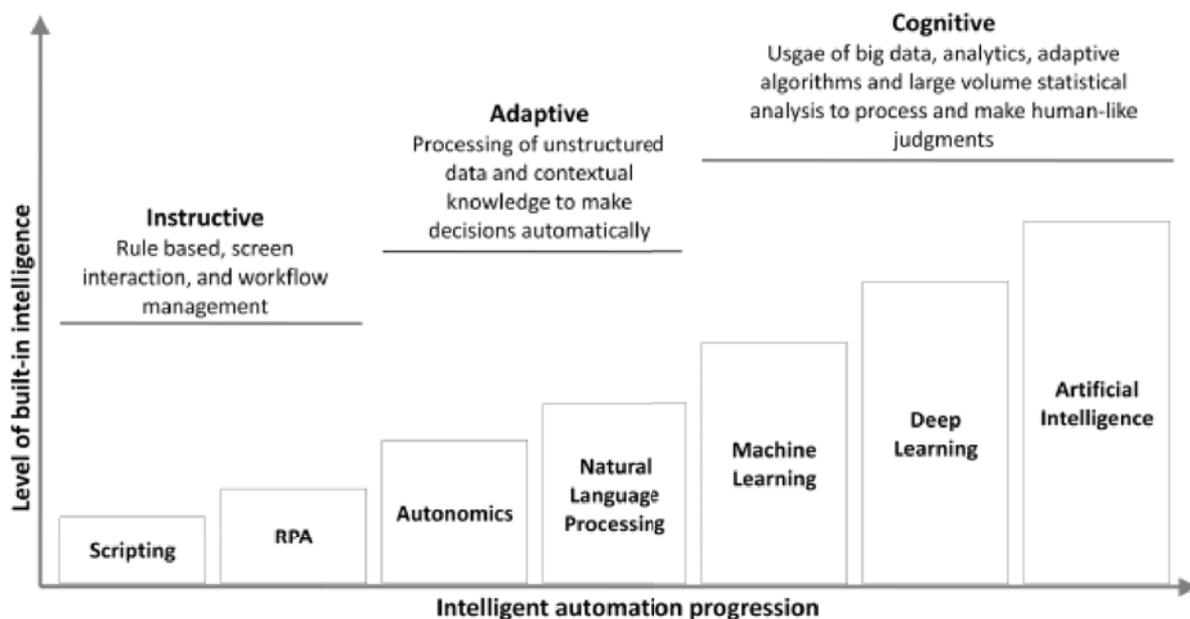
In summary, Robotic Process Automation (RPA) involves use of AI and machine learning software to handle high volume repeatable tasks that previously were carried out by humans (4).

The ‘bots’ used in RPA technology can be classified into three categories – **probots, knowbots and chatbots**. **Probots** follow simple rules and repeatable rules to process data. **Knowbots** gather and store information by searching the internet. **Chatbots** are virtual agents that respond to customer queries in real time.

Robotic process automation offers great scope for automating HR many processes that HR is currently required to carry out.

4. RPA and HR

Figure1: Intelligent Automation Progression



Source: *Intelligent Automation Services RadarView 2018* (5)

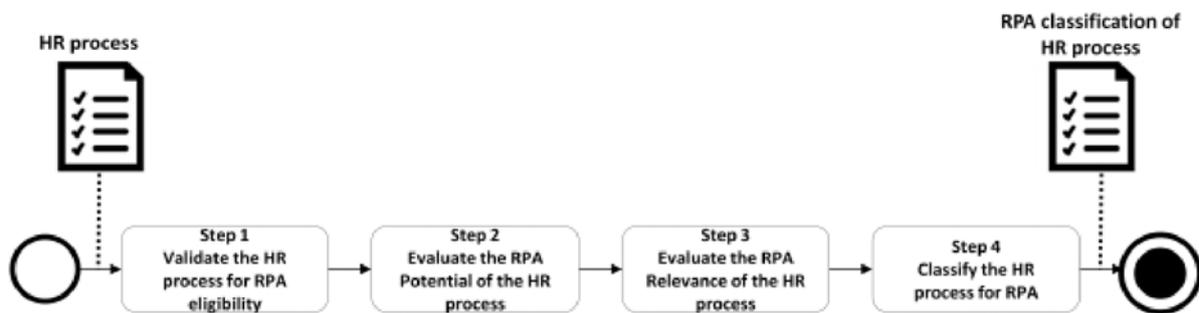
RPA has immense potential for deployment in HR processes. It can support automation of tasks such as on boarding and off boarding of employees, updating employee information, process of timesheet submission, and many other routine HR tasks.

Deployment of RPA in HR can support the organizational Industry 4.0 journey by enabling better service to employees and managers, ensuring that HR processes comply with required standards and regulations, facilitate rapid initiation and completion of HR processes, enhance efficiencies by digitizing data and auditing process data, deliver cost savings for manual and repetitive tasks and enabling HR team to be more productive.

5. Identifying HR processes that are suitable for RPA

One key question needs answering for identifying HR processes suitable for RPA approach is - what characteristics of an HR process make it suitable for RPA. A robust and structured approach needs to be in place to identify HR processes that can be automated using the RPA approach. Research (6) recommends a four step approach (Figure 2) – validation, assessment, evaluation and classification to analyze processes and verify their suitability for automation using RPA.

Figure 2: Identifying HR Processes for RPA



Source: Adapted from Leshob, Bourgoïn, & Renard (2018)

The first step to **validate** the process eligibility for RPA automation is to assess the process maturity and standardization. Evaluating process maturity involves verifying whether the results of the HR process are stable and predictable. Standardization entails validating that the HR organization across different teams and branches is adopting a standard process to accomplish the HR outcomes of the said process.

The second step requires **assessing** the RPA potential of the HR process, meaning the capacity of software robot to do the work that has so far been performed by humans. This RPA potential of the HR process is assessed based on properties of – (a) the extent of manual interaction involved in the HR process (b) whether there is use of a software application to execute the process and (c) if the activity is based on clearly defined business rules.

The third step is to **evaluate** the RPA relevance of the HR process. RPA is fit for a process with high transaction volume, but low degree of complexity (7). Transaction volume refers to the average number of transactions of the activity performed per day. Complexity of the process refers to the total time required to complete the process.

The fourth step is to **classify** the HR processes suitable for RPA. An HR process is suitable for RPA if both RPA potential and RPA relevance are highly suitable for a RPA approach. On the contrary, a HR process is not suitable for the RPA approach if both RPA potential and RPA relevance are low.

6. HR activity RPA propensity mapping

Zinnov Management Consulting (8) has identified 17 HR processes that has relevance for the RPA approach using the DRAUP platform. These HR processes fall under 6 broad HR functions – HR Strategy,

Talent Acquisition, Talent Development & Performance Management, Compensation & Benefits, HR Operations and Employee Relations - that Zinnov has identified.

6.1 RPA potential in Talent Acquisition

Processes that have high RPA potential include (a) publishing of open roles to company portal or website, (b) preliminary candidate screening, interview scheduling, (c) autonomous candidate status notification, (d) applicant information management across multiple systems from application submission to completing new hire process (e) assess, prepare and create new hire data, (f) initiate offer letter mailing (g) information collation from disparate systems for onboarding.

6.2 RPA potential in Talent Development and Performance Management

Processes with high RPA potential in this include (a) mailing of performance review forms to employees and managers, (b) data scrutiny (c) schedule performance interviews (d) publish predefined performance reports to managers.

6.3 RPA potential in Compensation & Benefits

Processes with high RPA potential in Compensation & Benefits include (a) autonomous updating of payroll inputs (b) time and attendance data validation (c) gross salary and net salary calculation, (d) online payslip distribution (e) depositing dues such as Provident Fund (PF, a retiral benefit), Insurance (ESI), Tax deduction at Source (TDS), etc. (f) educate employees on benefits available through notification (g) benefits utilization analysis reports (h) autonomous mailing of reward nomination forms (i) email notification of rule based recognition (j) payroll data feeding of monetary rewards.

6.4 RPA potential in Employee Relations

Processes with high RPA potential in Employee Relations include (a) tracking of employee grievance requests (b) notification of process stage or case completion (c) initiate periodic surveys (d) check for data completion (e) build reports for management action

6.5 RPA potential in HR Operations

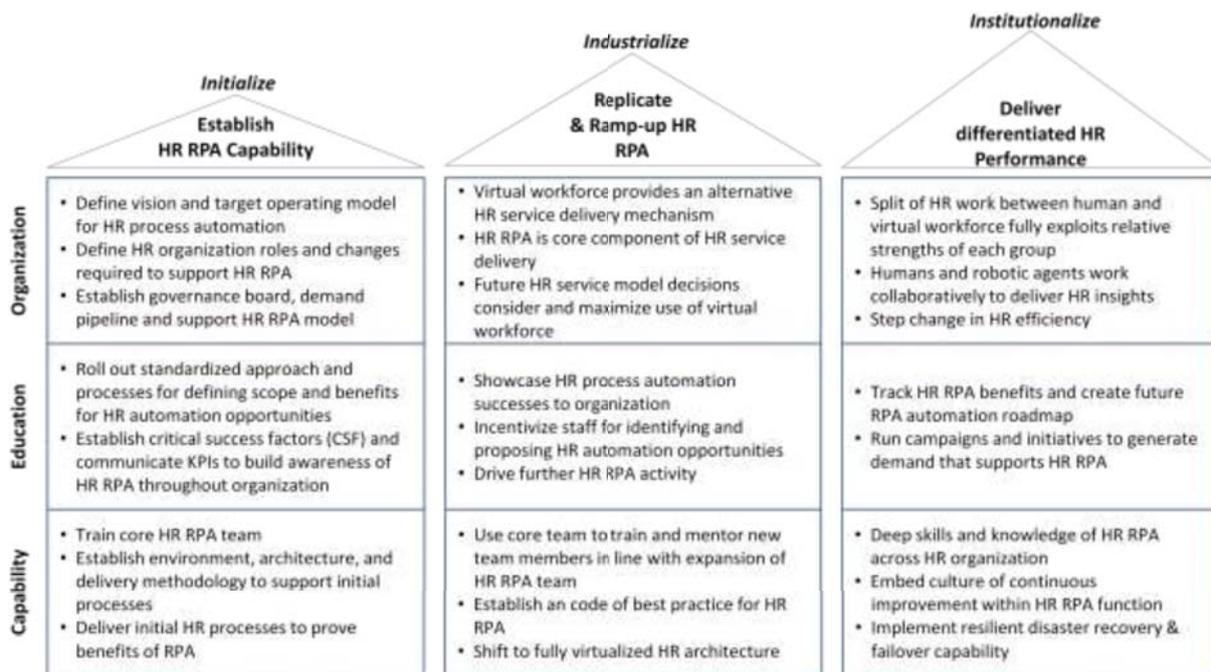
Processes with high RPA potential in HR Operations include (a) mail notification of exit requirement (b) notify missing data or non-compliance (c) mail exit letter upon process completion (d) automated review of employee time records including leave / absence (e) auto approval of standard expenses based on defined , interview scheduling and call for manual intervention, if required.

7. Mapping the HR RPA journey

The realization of the RPA potential requires creating awareness within the HR organization as well as the broader organization, organizational adaptation to RPA and specific RPA skills and capability. A three stage RPA Maturity Model (7) – *Initiation* stage, *Industrialization* stage and *Institutionalization* stage - can be adopted for HR RPA. At each of these stages, the dimensions of organization, training & education and capability building needs to be considered.

Figure 3: HR RPA maturity model

Realizing the full potential of HR RPA requires focus on building awareness, adapting the organization to HR RPA roll out and creating capability



Source: Adapted from ©BluePrism RPA Maturity Model

7.1 Initiation stage

At the initiation stage, the organization is required to establish HR RPA capability through – defining a clear vision and operating model for adopting the HR RPA, define the different organizational roles and the adaption or changes required to the present organization structure to facilitate the RPA adoption and implementation, establish a HR RPA governance board, the HR RPA demand pipeline and support model.

At this stage, the organization will need to focus on the educational and training aspects of the HR RPA adoption. This will involve – roll out standardized approach for the identified HR processes, defining the scope of automation opportunities and the benefits of it.

Further, the organization would need to build RPA capability in the RPA and HR team through – training the core RPA team and HR team, provide the necessary resources and environment to support the implementation process.

At this stage, it may be important to deliver the initial processes to prove the benefits of the RPA adoption, before the HR organization can move to the industrialization stage.

7.2 Industrialization stage

In the industrialization stage, the focus is to replicate the success of the RPA processes in other HR processes, or other divisions or geographies. At this stage, the RPA process is an alternative and reliable HR service delivery mechanism for the organization. The use of RPA architecture is built into the design framework of future organizational design decisions.

From a training & education perspective, it is important at this stage the HR organization showcases the success of RPA to the broader organization. Incentivizing staff on identifying and proposing new automation opportunities at this stage will encourage broader will and openness for adopting the RPA approach. Also, it is important at this stage to track the benefits derived from the RPA implementation.

Another focus area of the industrialization stage would be to expand the HR RPA implementation team by inducting, training and mentoring new RPA team members; establish a code of best practice for RPA and prepare the organization for maximize the RPA application in HR.

7.3 Institutionalization stage

At this stage, the HR focus is to deliver differentiated performance for the organization by splitting the work between the human and robot workforce that enables best possible leveraging of the strengths of both work groups. Also, at this stage both human and robot workforce work collaboratively to deliver deep business insights that significantly enhances the HR organizational efficiency.

Training & education at this stage involves having a clear roadmap for future RPA automation and run strategic campaigns and initiatives to generate demand for greater automation that supports drivers of business.

The capability level at this stage is deeply embedded across the RPA team and a culture of continuous improvement is ingrained. In addition, the organization possesses resilient disaster recovery and failover capability.

Thus adopting a structured, controlled and professional approach to RPA implementation ensures that the organization is able to establish HR RPA capability, ramp-up and replicate HR RPA processes and deliver differentiated performance that supports business.

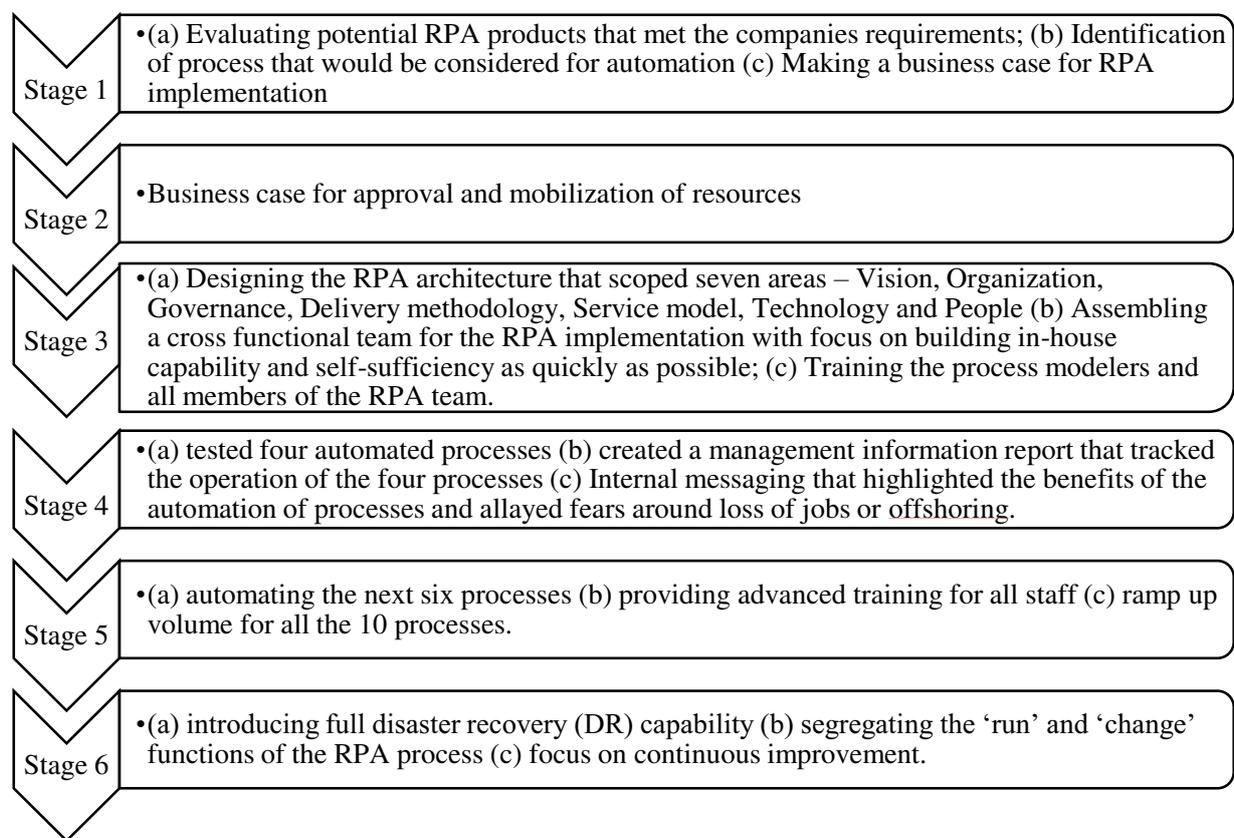
8. Case study of a company that adopted RPA in HR

Company X (real name not used) is a listed company that has domain and technological expertise in the space of complex business processing that supported clients in taking care of non-core and back office functions. The company prided itself in performing this activities better, faster and more cost effectively that allowed customers to focus on their core business and strategic activities. The company services clients internationally across multiple industries. In 2014, the company employed around 7400 employees spread across 15 countries. Around 2011, the company announced that its operating profits would be at the lower end of analysts' expectations. The company brought in a new CEO with the specific focus of increasing revenues and restoring profitability.

Given the business model of the company, RPA seemed an obvious step for the company to improve process efficiency and effectiveness. In 2015, the company took the first step by appointing a program

manager for RPA implementation and specifying a target of 10 processes for automation. The company also ensured that a long term governance and competency enhancement group was put in place for this purpose.

Figure 4: Stage wise progression of HR RPA at Company X



At the first stage the company took the following steps to implement the RPA automation project – (a) Evaluating potential RPA products that met the companies requirements; (b) Identification of the process that would be considered for automation (c) Making a business case for RPA implementation (7)

In the next stage, the RPA implementation project manager presented the business case for approval and mobilized the necessary resources.

In the third stage , the organization focused on (a) Designing the RPA architecture that scoped seven areas – Vision, Organization, Governance, Delivery methodology, Service model, Technology and People (7) (b) Assembling a cross functional team for the RPA implementation with focus on building in-house

capability and self-sufficiency as quickly as possible; (c) Training the process modelers and all members of the RPA team.

In the fourth stage, the company (a) tested four automated processes (b) created a management information report that tracked the operation of the four processes (c) Internal messaging that highlighted the benefits of the automation of processes and allayed fears around loss of jobs or offshoring.

Having tasted success, in the fifth stage, the company proceeded with (a) automating the next six processes (b) providing advanced training for all staff (c) ramp up volume for all the 10 processes.

With industrialization of the RPA well in place, in the sixth stage the company focused on (a) introducing full disaster recovery (DR) capability (b) segregating the 'run' and 'change' functions of the RPA process (c) focus on continuous improvement.

The company seemed to move through the initiate, industrialize and institutionalize stages in a structured, controlled and professional manner. The payoffs from the RPA implementation was as anticipated in terms of improvement in quality of service, drastic reduction in error rate and quick and cheap deployment of process across different businesses.

9. Discussion and Conclusion

Technology is changing the industrial landscape and RPA is gaining traction in organizations with the focus on improving service delivery, reducing error rates and having cost effective processes that can ramped up quickly.

RPA offers great scope for automation in HR in the areas of Talent Acquisition, Talent Development & Performance Management, Compensation & Benefits, HR Operations and Employee Relations. The specific processes where HR automation offers great scope includes - publishing of open, preliminary candidate screening, interview scheduling, candidate new hire process completion, create new hire data, offer letter mailing, onboarding, performance review forms mailing, performance review scheduling, publishing of performance reports to managers, payroll updation, time and attendance data validation, gross salary and net salary calculation, online payslip distribution, depositing statutory dues, tracking of employee grievance requests, employee surveys, exit process, and so on.

However, RPA implementation requires a structured, controlled and professional approach to ensure it provides anticipated benefits. This article discussed the structured approach of (a) Initiation (b) Industrialization (c) Institutionalization that companies can adopt ensure the anticipated benefits are realized as part of the RPA implementation. A case example is provided of how a company in the business process management space went about implementing its RPA strategy.

REFERENCES:

1. Schwab K. The fourth industrial revolution. Currency; 2017.
2. Mankiya J, Lund S, Chui M, Bughin J, Woetzel J, Batra P, et al. Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages. McKinsey Co. 2017;
3. Bustamante M, Gandhi N. Human resources in the age of automation. McKinsey Q. 2018;

4. Rouse M. Robotic Process Automation. IoT Agenda.com. 2019;
5. Bhatnagar S. Intelligent Automation Services RadarView 2018 - witnessing the next stage of enterprise cognitive evolution. 2018; Available from: <https://avasant.com/intelligent-automation-services-radarview-2018/#download>
6. Leshob A, Bourgouin A, Renard L. Towards a process analysis approach to adopt robotic process automation. In: 2018 IEEE 15th International Conference on e-Business Engineering (ICEBE). IEEE; 2018. p. 46–53.
7. Willcocks LP, Lacity M, Craig A. Robotic process automation at Xchanging. 2015;
8. Ramalingegowda C. How To Leverage RPA For HR Automation. 2019; Available from: <https://zinnov.com/hr-automation-how-rpa-will-reshape-the-hr-function/>