

Robotic Process Automation (RPA) Implementation Approach: A Qualitative Research.

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Abstract

The advent of Information technology has seen leap over years to overcome all human challenges and barriers. With introduction of artificial intelligence and decision science it is now possible to automate every aspect of industrialization possible. Robotic Process Automation (RPA) is such an invention that is claimed to bring productivity and efficiency gains. Through this qualitative research paper, it is aimed to unleash the use of RPA and the way the project teams from IT are implanting the successful Robots. There is no real time implementation data available which would give a base line for further research and development of RPA technology. The researcher chose qualitative research methodology, to gain better insight from small focused group on how they strategize the RPA projects within IT industry today for their end customers. The exploratory study revealed that though there is theoretical base to RPA implementation, new advances through process and text mining has introduced further earned confidence to organizations in implementing more RPA and reduces wastage's and Opex.

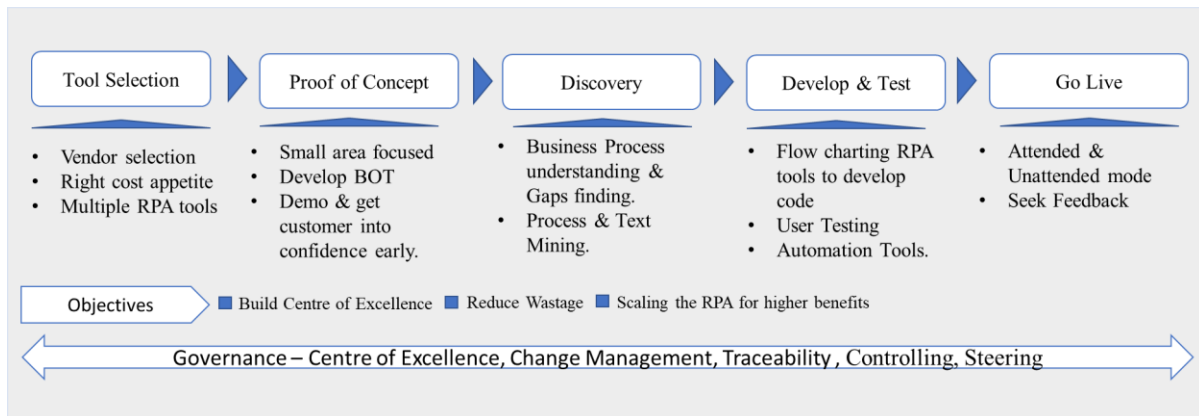
1. Introduction

As the word in moving towards Digital Transformation every day, Robotic Process Automation (RPA) plays an important role in the automation of repetitive tasks that human carries out every day. RPA covers the “emerging technology” raising the high expectations in the industry today (Kommera, 2019). Robots (typically called as BOTs), are built to automate the mundane process and bring efficiencies (IBM Cloud Education, 2020). The main objective of the research study was to understand the RPA implementation strategy researched by various researchers and what is being implemented by the information technology experts and project teams.

2. Literature review

As suggested in the book by (Devarajan, 2018) in the works (Haber et al., 2022) of (Taulli, 2020, pp. 101–114), the tool selection for RPA implementation is one of the "key factors" to be considered which is based on vendor selection and appetite of the organization to spend the license costs. As suggested by (Kosmopoulos, 2020), there are seven ways to implement and scale up the RPA tool in any organization which includes building a centre of excellence, augmenting with process mining, understanding the wastage's in efforts of repetitive tasks of an organization before implementing RPA critical. The scalability of any RPA tool as recommended by (Behrens, 2014), is not just hidden but itself is a selling point in using it. The BOT which is built to run 24x7 for the customer organization is built through standard RPA tool; provides full reliability due to trustworthiness through security and privacy (Kumar & Balaramachandran, 2018). Tool selected for RPA platter of tools, is chosen for its versatility helping in solving systematic automation challenges (Devarajan, 2018). All these go with some cost and that is the cost of buying the RPA tool, yet it reaps return on investments seven times, by saving organization's money into mundane activities (Kosmopoulos, 2020). The starting point for the RPA implementation team is to carry on the proof of concept. The suggestions made by (Herm et al., 2022), is to focus on simple processes which are relevant to the scope of organization. This would give an early earned confidence to the management who are deliberate to implement RPA as part of digitalization. The next stage of RPA implementation is discovery, where the implementation team would conduct the business process management (BPM) to understand the current process and deriving new with optimization through BOT using Business Process Model and Notation (BPMN) as suggested by (Agaton & Swedberg, 2018) in the thesis. At this stage the implementation of Process mining will allow the organization to easily and rapidly derive the business process maturity. Another new facet of the era as suggested by (IBM Cloud Education, 2020), is text data mining which helps to transform the unstructured text into structured text. The (Blue Prism Limited, 2022), suggests that development of the code for RPA BOT must be structured with flow chart approach in the charting tool. The testing of the developed BOT, can be verified through automated using Work Fusion Design Studio and Selenium Web Driver but cannot go without user acceptance testing (UAT) ((Yatskiv et al., 2019)). As suggested by (Automation Anywhere, 2022), the BOT is first deployed on live in attended mode and once stable is moved to unattended mode. Once the BOT is live and is put on unattended mode, any changes creeping would undergo change management. As suggested by (Mohan et al., 2008), the change management of any software would need to

have two important practices of maintaining, software configuration management (SCM) and traceability of what these changes are to be managed. The project governance is critical to run a project successfully and along with change management, controlling, steering are other important aspects (Lappi & Aaltonen, 2017). Based on the Literature review, the following model has been designed covering each stage of RPA implementation and approach, determinants as follows.



Source : Author.

Figure 1: RPA Implementation approach derived from Literature Review.

3. Methodology

The researcher undertook this study under Qualitative Research method as the number of respondents (experts from Information technology) were less than ten. The Literature review was conducted to underpin the theoretical model of RPA implementation strategy as depicted under literature review section. Interview was conducted with focused set of respondents with semi structured questionnaire set corresponding the research questions. Narrative analysis was carried out for the responses captured as part of interview. As suggested by (Miles and Huberman, 1994), codes were used to tag the meanings to the narratives and themes were created. Based on each theme, sub themes were generated and corresponding narratives were segmented for commonality and traced to themes as displayed in the next section. Based on the literature review the following research questions were framed:

[RQ-1] What is RPA and How do one go about implementing RPA ?

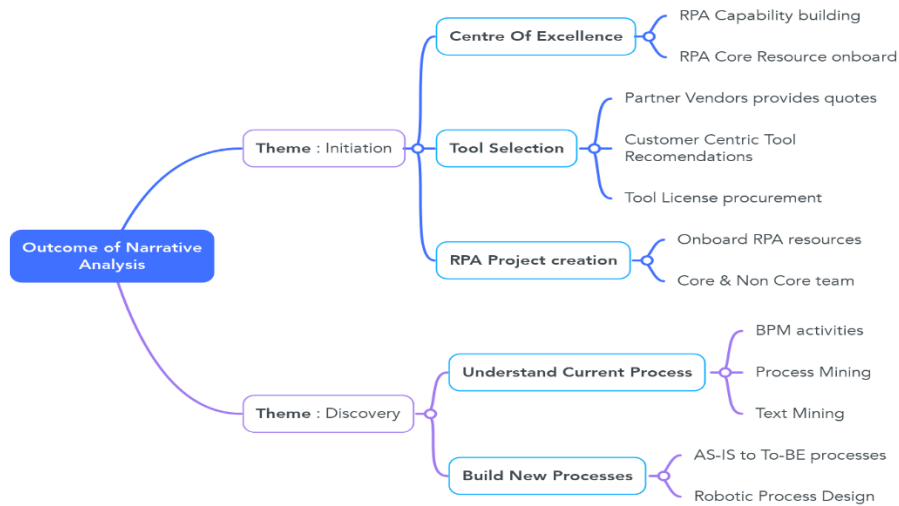
[RQ-2] What are the Stages involved in RPA Implementation?

[RQ-3] How are the subjects matter experts from IT approach the various activities ?

4. Findings from Exploratory Study

Broad themes and sub themes arose from the analysis of the interviews, that were pertinent to understand the RPA implementation. The appendix provides distribution of the respondents

along with narratives. For each of the themes (aligned to project phases) and sub themes (major categorical tasks) .which were outcome of the study , the dimensions are drawn up as given in the mind map below.

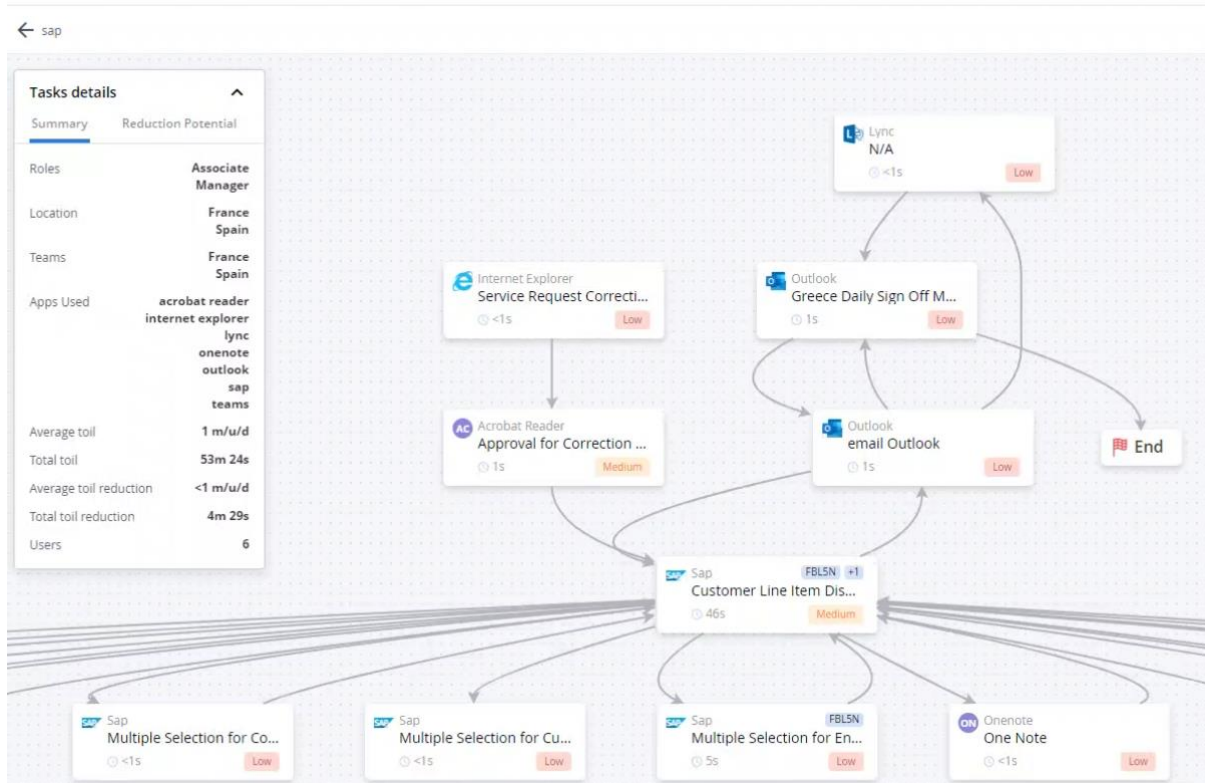


Source : Author

Figure 2 : Initiation and Discovery Themes revealed after Narrative Analysis

4.1 Initiation : The respondents shared the implementation experience starting with formation of RPA centre of excellence in the organization which caters to all needs of the RPA projects to be delivered. The RPA capability in form of resources and tools is must and core RPA human resources must be on boarded to fulfil demands flowing in. The tool selection is based on projects requirements , customer purchased or recommended tool and cost benefit received from tool vendors. The people expertise is a critical factor in this case as they need to know the tool purchased and avoid costly recruitment process. Based on the project(s), the project manager will onboard some core and non-core resources.

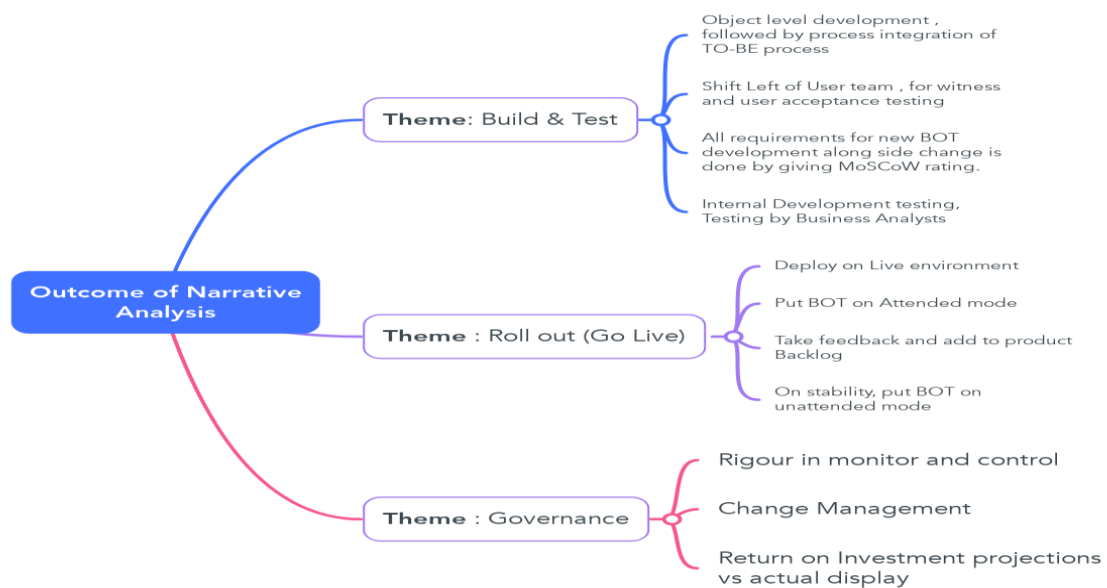
4.2 Discovery: At this stage the business analysts play a major role. They would understand the current process in place (AS-IS) and build the proposed process (TO-BE) with Robots in place which would reap the benefit for the customer organization (for whom we are building the Robots). It is thus evident from the narratives that bringing gaps in the current processes through text mining and process mining for RPA design and implementation is the key and needs to be followed. The respondents also gave demo on text mining , to find out how text mining tools can identify time spend on each activity as shown in the figure below.



Source : Demo Screen shared by one of the respondents

Figure 3 : Text Mining using Soroco tool

The next set of themes discovered as part of narrative analysis , projects the development of BOT and test, roll out to live and governance set for the projects . The below mind map provides a snapshot of the themes and sub themes.

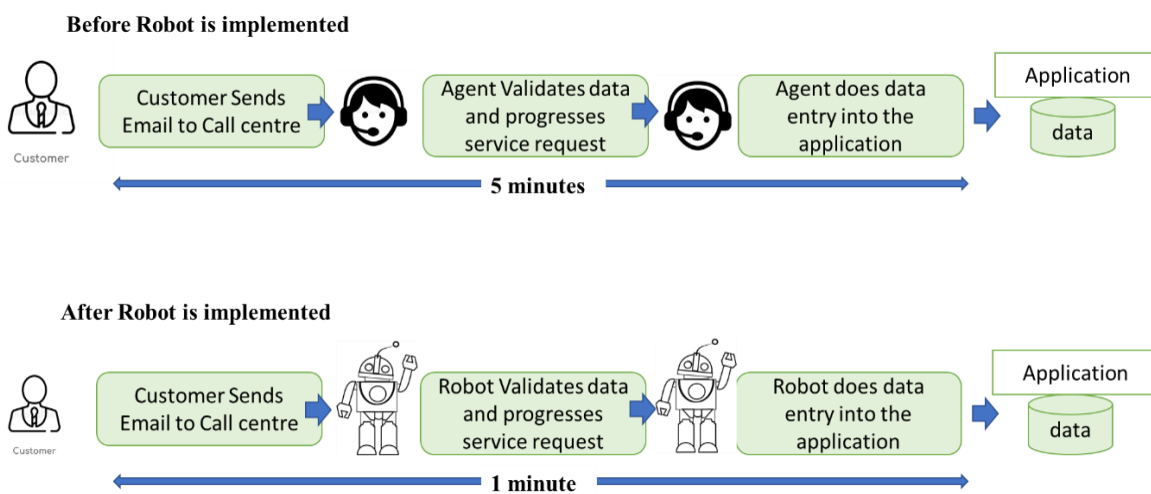


Source : Author

Figure 4: Other Themes revealed after Narrative Analysis

4.4 BOT development, Test and Roll out

Facts discovered after speaking to the respondents, who are developers in RPA and testing the BOTs as readiness to be implemented, matched to the literature review findings. These are focused on object level and process level development and early testing of BOT in both attended and unattended mode. Once the BOT is thoroughly tested by development team, it is witness tested by test team and user acceptance testing is conducted by pushing transactions to the BOT in attended mode. Once the project team finds the BOT is suitable for use it is deployed to live environment on attended mode (BOT runs and executes transactions) until it is stable and is put on the unattended mode. The figure below depicts the scenario before Robot was deployed and after Robot is deployed.



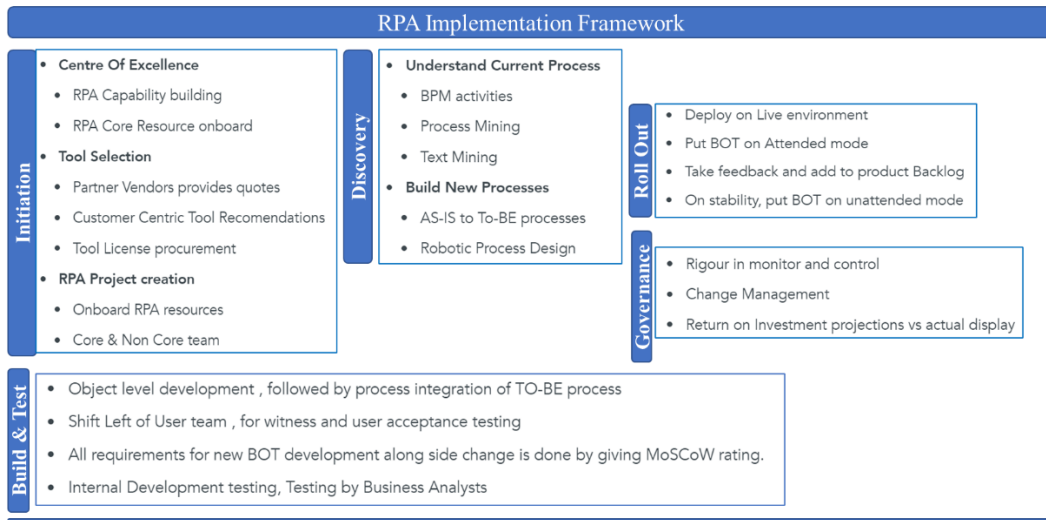
Source : Author

Figure 5: Scenario before Robot is implemented and after implementation

Before Robot was implemented the agents took 15 minutes to complete a single transaction, post deployment of robots it took 1 minute per transactions i.e. 93% savings in efforts.

5. Discussion and Conclusion

With BOT deployed in the process, around 57% savings in efforts can be seen per 1000 transactions. However the narratives suggested that to achieve the savings, it is vital to have the right processes to be followed in building and deployment of BOTs. Based on literature review and narratives, the analysis gives the one view of best fit implementation approach as follows and the findings answers the research questions.



Source : Author.

Figure 6: RPA Implementation Framework

6. Appendix

Table 1: depicting the profile of respondents and collected key narratives (*these are only few narratives only due to data sensitivity*).

Respondent code	Role in RPA implementation	No of Years of experience	Narrative(s)
{PK} {MJ}	Project Lead	15 years, 18 years	<i>we selected the tool based on <u>recommendations</u> made by our organization <u>centre of excellence</u> and <u>expertise of people</u> we have on these tools. The base line of tool selection is also driven by <u>capability, robustness and versatility of the tool</u>. The <u>text mining</u> and <u>process mining</u> would help in understanding each transaction level activities and how much time each member is spending on an activity.</i>
{KO}	Subject Matter Expert	24 years	<i>we selected the tool for couple of projects based on <u>customer recommendations</u> and for few we</i>

			<i>applied our rationale based on <u>experiences</u> and <u>benefit realization</u>. <u>MoSCoW rating of requirements is important.</u></i>
{GY}	Solution Designer	18 years	<i>I have carried out more than fifty proof of concepts (POC) in last several years, covering various tools of RPA. The objective is take a <u>small portion of scope</u> what you want to automate. Carryout the POC and demonstrate <u>benefits to the customer</u>. The benefits can be in <u>time savings</u> of mundane work activities and you can scale up to show the wider benefits based on <u>team size and volume</u>.</i>
{SG}	Lead Business Analyst	23 years	<i>With my 10 years of experience in BPM , I have learnt that we need to deep dive , understand <u>current processes (AS-IS)</u> and <u>build new optimized process (TO-BE)</u> and build <u>robotic process documentation</u> for developers. <u>Text mining</u> and <u>process mining</u> would be added advantage. Follow this steps in every RPA implementation projects <u>as rituals</u>.</i>
{PK} {YG}	Development & Test Lead	9 Years, 14 years	<i>The RPA <u>object creation is more structured</u> and then process development and integration, <u>module based testing</u> followed by <u>witness testing</u> by stakeholders help to earn confidence early . <u>Shift left of user acceptance testing</u> is critical. Involve users directly from day one helps to implement RPA effectively.</i>

{TS}	Account Manager	21 years	<i>Right Governance needs to be in place , with better change management, <u>centre of excellence</u> helps to have core and augmented resources when <u>demands increase</u>. <u>Prioritization</u> of requirements is key to success.</i>
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Source: Author collected the narratives from Respondents

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