PERFORMANCE EVALUATION REGARDING THE IMPLEMENTATION OF ROBOTIC PROCESS AUTOMATION: A PROPOSED MATURITY MODEL

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Abstract

This paper aims to provide a maturity model for robotic process automation (RPA) to facilitate the assessment of Swiss service organizations in regard to their RPA readiness. The examination of existing literature suggests initial requirements for a new RPA maturity model, which is complemented with insights from eight interviews with RPA experts from Swiss service providers. By applying a qualitative content analysis, this research approach raises a variety of elements concerning organizational structure, RPA goals, process handling, culture, and technology with significant influence on RPA success. Combining this practical evidence with theoretical principles results in an RPA maturity model with 15 elements, pertaining to the four defined categories organization, education, technology, and process and data. By reaching initial, integrated, or optimized maturity, the model does not only assess the current state of specific elements but also suggests potential room for improvement. A general applicability of the RPA maturity model is not yet given due to its qualitative research approach and therefore requires further validation. Reaching from end user level to upper management, the RPA maturity model enables a facilitated but important assessment of RPA use when considering its implementation or improvement, even before consulting any external partners. Adding to a very limited selection of existing RPA maturity models, this study now provides an organizationally far-reaching, theoretically profound, and easily applicable tool to support the implementation or adaptation of RPA use.

Keywords: Robotic Process Automation, RPA, Maturity Model, Maturity, Automation, Service Companies, Business Process Management

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1. INTRODUCTION

Robotic process automation (RPA) is considered to be a technological approach that enables the automation of repetitive tasks or processes based on software robots by operating on the user interface of other information systems (Aguirre & Rodriguez, 2017; Lacity & Willcocks, 2016; van der Aalst et al., 2018). Compared to traditional automation concepts, RPA replaces rule-based, routine human work with software tools that access multiple systems and perform tasks without IT integration or redesign of systems in use (Hofmann et al., 2019; Schmitz et al., 2019; van der Aalst et al., 2018).

Regarding the evolutionary assessment of IT systems like RPA as well as their implementation across organizations, the concept of maturity models has been successfully applied. According to Wendler (2012), maturity models offer "a simple but effective possibility to measure the quality of their processes" (p. 1317). While the term *maturity* describes the state of a system regarding its readiness or completeness, maturity models mainly support assessments and are nowadays well established both in academia and practice (Becker et al., 2010; Lasrado et al., 2015). When discussing the implementation of technologies like RPA, a maturity model could therefore be useful to facilitate this strategic decision through minimizing risks when implementing RPA or uncovering room for improvement when already using RPA.

With a focus on this specific technology, various maturity models have already been developed until today but can be subject to criticism because of lacking conceptual guidance when balancing the requirements of generality, detail, and usability (see subsection 2.2). As pointed out by Syed et al. (2020), academic literature on RPA is still lacking a clear state of the art, consensus around the scope of the term and sufficient knowledge on successfully applying RPA. Especially considering the last point, a newly developed maturity model could be of great support. This, however, requires models to not only consider specific human aspects often discussed in literature for successful RPA, but also to "explore the operationalization of RPA from the technical and implementation perspectives" (Syed et al., 2020, p. 10). Furthermore, this paper takes up a key suggestion for further research by Pramod (2021); developing a capability maturity model that can be aligned to various domains. If implemented well, such a model would address a large part of his research agenda, from the consideration of heterogeneous RPA input sources, to the alignment of strategy, business models and technology (Pramod, 2021). In order to develop such a robust framework for implementation and evaluation required by existing literature, this paper addresses the following research question:

RQ: Which properties does an adequate maturity model for RPA require in order to effectively support service companies in successfully implementing and using RPA?

To answer this question, this study aims to develop a new consolidated RPA maturity model based on academic sources as well as empirical data gathered from automation experts across four Swiss service firms. Based on their experiences, learning, and strategical decisions, the design of an extensive maturity model, whose elements and maturity levels contribute to a profound and realistic assessment of RPA readiness, is the primary goal of this paper. This outcome would provide organizations with a reliable RPA maturity model that enables them to base introducing or adaptive decisions on more grounded and thoroughly analyzed data.

First of all, the paper provides some further detail on RPA use, benefits, and challenges. Afterwards, existing RPA maturity models and their implications for developing a new model are shortly discussed. In the main part, central expert statements are put into context and categorized according to relevant areas of influence on RPA success. Based on the literature and these qualitative inputs, the suggested model's structure, maturity levels, and elements are finally defined. Lastly, a conclusion addresses the model's limitations and suggestions for further research.

2. LITERATURE REVIEW

2.1. RPA foundations

RPA can be defined as "an umbrella term for tools that operate on the user interface of other computer systems in the way a human would do" (van der Aalst et al., 2018, p. 269). This outside-in approach, in which the information systems remain unchanged, thus stays relatively close to the initial process execution and provides a wide range of possible use cases. Following a more technical approach, Leno et al. (2020) define the underlying RPA systems as tools that perform [if, then, else] statements on structured data. Moreover, RPA tools can execute not only operations obtainable via APIs, but also handle tasks that require user interaction. Finally, RPA enables the specification and execution of scripts through software bot operation (Leno et al., 2020). Mapping a process in the RPA tool language for the software robot to follow operationally defines RPA tools (Tornbohm & Dunie, 2017).

As can already be followed from its definition, RPA has a rather superficial influence on existing systems because the software bots work on the graphical user interface (GUI) layer and do not require specific interfaces or process changes while automating processes originally performed by humans (Hofmann et al., 2019). RPA tackles a specific range of tasks and processes, which are generally clearly defined, rule-based, and repetitive (Lacity & Willcocks, 2016). Aguirre and Rodriguez (2017) define further process characteristics which increase the possible fit of an RPA use: 1) highly prone to human error due to manual labor; 2) high volume with many repetitions and routine; 3) specific rules with low cognitive requirements; 4) digital data handling with access to multiple systems; 5) standardized and mature with limited exception handling.

Implementing RPA into suited processes with the characteristics as described above can yield various benefits but also introduce new risk factors. UiPath (2020) mentions that successfully automating a suited process can lead to major cost savings and efficiency gains, guarantee greater resilience during workload peaks, improve risk and process transparency as well as increase process accuracy and compliance. They further state that RPA can have multiple positive effects in the domain of personnel productivity and happiness as well as lower the dependency on employees and increase value provision from employees due to a shift in focus towards more strategic tasks. While all these arguments sound relevant, they are potentially biased by coming from one of the biggest providers of RPA solutions. In academic literature, rapid cost reductions and increased capacity, supported by the fact that RPA is an in-house solution built on existing applications, are often thought to be the most convincing arguments (Aguirre & Rodriguez, 2017; Hofmann et al., 2019; van der Aalst et al., 2018).

Even though RPA benefits are therefore very simple and straight-forward, its potential drawbacks can be much more concealed (Alberth & Mattern, 2017). It is important to keep in mind that RPA can in no way guarantee any of the mentioned potentials if its preparation and implementation are lacking fit or quality (Syed et al., 2020). Further examining existing literature reveals challenges that need to be considered when carrying out an RPA solution and thus already provides first insights into potential categories and levels of an RPA maturity model.

Technical challenges: In order to avoid technical problems during and after implementation, choosing the right RPA tool which aligns with the organization's requirements and processes is central (Moreira et al., 2023; Syed et al., 2020). Furthermore, the complexity of integrating RPA with existing systems, applications and databases can be time-consuming but is necessary to avoid the usage of RPA as a quick-fix band-aid (Eulerich et al., 2023; Moreira et al., 2023). During the automation process, ensuring data and access security and compliance with regulatory standards represents an additional risk (da Silva Costa et al., 2022; Eulerich et al., 2023; Pramod, 2021). Finally, performance and stability have to be maintained when scaling up RPA initiatives across an organization (Pramod, 2021; Syed et al., 2020).

Process challenges: Regarding processes, identifying the most suitable ones for automation that provide significant benefits and have a suitable level of standardization, presents the basic challenge concerning data incompatibility (da Silva Costa et al., 2022; Moreira et al., 2023; Pramod, 2021). When dealing with increased complexity, lacking structure, or strong dynamics within processes, advanced automation techniques or cognitive capabilities are required (Pramod, 2021; Syed et al., 2020). Exception handling is considered another critical challenge of RPA implementation (Moreira et al., 2023; Syed et al., 2020).

Governance and strategy challenges: Risks in this field can be mitigated by establishing a governance framework to manage RPA initiatives, including roles, responsibilities and the measurement of performance, without underestimating any of these elements (Eulerich et al., 2023; Syed et al., 2020). Further, ensuring the alignment between business objectives and IT strategies is beneficial for implementing RPA effectively (Pramod, 2021; Syed et al., 2020).

People and skillset challenges: This area can be a great threat for RPA success due to a potential shortage of skilled resources in RPA expertise. Also, employee resistance to automation due to the fear of job displacement has to be overcome (da Silva Costa et al., 2022; Moreira et al., 2023). Change management is necessary to handle resistance to change and ensure smooth transitions for affected employees but also involves the training and upskilling of employees (Pramod, 2021).

Monitoring and maintenance challenges: If no effective monitoring and reporting mechanisms are documenting and tracking the performance, efficiency, and effectiveness of RPA bots, future success cannot be guaranteed (da Silva Costa et al., 2022). Furthermore, disruptions can be avoided and performance can be optimized, when RPA systems contain timely updates and troubleshooting (Moreira et al., 2023). Continuous improvement through process optimization and enhancement is necessary to achieve ongoing benefits after initial automation and being able to adapt to changing environments (Moreira et al., 2023; Syed et al., 2020).

2.2. Existing models: Characteristics and implications

When going through existing literature, a clear definition of the term maturity model is difficult to extract. Klimkó (2001) states that "maturity models describe the development of an entity over time. This entity can be anything of interest: a human being, an organized function, etc" (p. 271). A more extensive definition with a focus on the different maturity stages is presented by Pullen (2007), who sees a maturity model as "a structured collection of elements that describe the characteristics of effective processes at different stages of development. It also suggests points of demarcation between stages and methods of transitioning from one stage to another" (p. 9). In many publications, the capability maturity model (CMM) is mentioned when discussing this concept as it takes on a pioneering position in this area: The five maturity levels *initial*, *repeatable*, *defined*, *managed*, and *optimizing*, describe the development of deficient processes. They first become disciplined, then standardized and consistent, afterwards predictable, and finally continuously improving (Paulk et al., 1993).

Following the example of CMM, many different maturity models for a wide range of use cases have been developed since. Despite still being dominated by the software area, capability maturity models have become less focused on the software domain over time (Wendler, 2012). They also start to consider the necessary competences to reach the next maturity level instead of only defining process characteristics on a certain level. By replacing a life-cycle approach with a potential performance perspective, flexibility and adaptivity have gained importance over the rigid and strict design of the original CMM (McBride, 2010). The integration of best practices and emphasis on the importance of continuous improvement is essential for today's maturity models. A small range of these models already specified in RPA maturity and their content and relevance are summarized in Table 1. This model overview leads to several key conclusions:

Table 1. Characterization of existing maturity models on RPA

RPA maturity model	*Blue prism: Enterprise maturity model*	*UiPath: Automation operating model*	*HFS Research: A maturity model for RPA*
Authors	Willcocks et al. (2015)	Catalli (2020)	Sutherland (2014)
Dimensions	• Organization • Education • Capability	• Operating model • Executive sponsor • Investment model • Idea pipeline	Ten organizational elements (different responsibilities, design elements, visions and values)
Maturity levels	• Established capability • Replicate & Ramp-up • Deliver differentiated performance	• Proving • Establishing • Expanding • Scaling	• Initialization • Industrialization • Institutionalization
Strengths	Broad applicability, great overview of necessary steps, meaningful naming and demarcation of maturity levels	Simple structure, clearly shows the scaling of RPA and its most important requirements	Detailed and precise, elements address decisions which highly influence the intensity and direction of RPA approach
Weaknesses	Limited in extensiveness due to rather small number of broad categories	Focus on positive outcomes instead of stating necessary requirements to reach higher maturity	Lack of simplicity, no concise naming or grouping of categories, requires established role of RPA even at low maturity and increased topicrelated knowledge
Specialties	Increasing cultural adoption as consequence of higher maturity	Very strong marketing perspective, prediction of hyper automated future as consequence of scope broadening	Fluent approach, organizations can be simultaneously engaged in some elements at different maturity levels

Availability: The availability of real maturity models is very limited. They do not only lack in number, but also in theoretical profoundness, extensiveness, and clarity. Defining an RPA maturity model that incorporates a wide range or organizational aspects while maintaining simplicity, therefore represents a novel addition to existing literature.

Approach: Taking a rather descriptive approach, most models define the characteristics of RPA and its environment at a certain maturity level and even though the requirements to reach that stage are mentioned, the necessary steps to fulfill these requirements are neglected. The models therefore provide a retrospective assessment tool when already having implemented RPA in the organization, but skip the step of originally assessing how ready and structurally suited an organization essentially is.

Scope: The scope of existing models is designed to be applied in a variety of organizations which may differ in their structure and branch affiliation but share the common wish to successfully implement RPA. This advantage of having a widely applicable maturity model also has the drawback of losing accuracy for specific branch or industry applications.

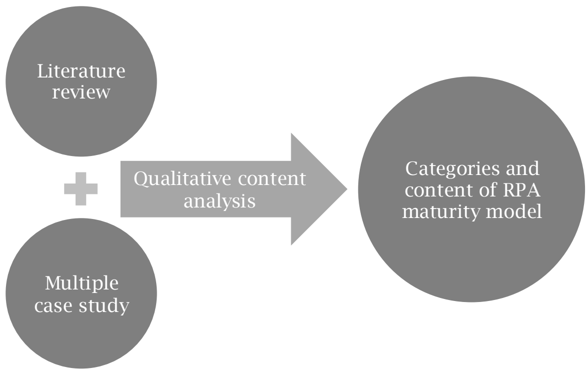
The background information on RPA, as well as the analysis of existing maturity models for this technology, thus further motivates the development of a new RPA maturity model whose design should contribute to the successful implementation of RPA at Swiss service organizations. Based on these main drawbacks of existing models, the newly developed RPA maturity model should be theoretically sound, follow a potential performance perspective, and be more concise through its limited focus on Swiss service organizations.

3. RESEARCH FRAMEWORK

3.1. Method design

To extend initial thoughts on possible maturity model dimensions and elements emerging from the literature review, the theory is empirically complemented by additional guided expert interviews which should provide more case-specific information and inputs. These semi-structured expert interviews thus represent the central element of a qualitative multiple case-study research approach: As described by Eisenhardt (1989), this approach seems appropriate due to the relatively new research area of RPA, in which existing theory (maturity models) seems inadequate, as was shown in subsection 2.2. Furthermore, an iterative multiple-case study allows for the selection of cases from different contexts which may also offer opportunities to study temporal dynamics and processual changes (Eisenhardt, 1989; Langley, 1999). Since interviews are conducted with experts from different Swiss service organizations about RPA implementation processes and experiences, applying a multi-case study seems to be a promising approach in a suitable context.

Figure 1. Methodological design



By following Eisenhardt's (1989) suggested theory building from cases, it is expected to generate novel insights with less researcher bias than incremental studies or deductive approaches. In addition, the emergent theory, in this case, an RPA maturity model, is likely to be testable with measurable constructs and verifiable hypotheses, due to their involvement in the theory-building process (Eisenhardt, 1989). In summary, this paper's methodology follows Eisenhardt's example of building theory from case study research, being complemented by a thorough literature review. Based on a qualitative content analysis of four cases (eight interviews), a new theory in the form of an RPA maturity model is to emerge (see Figure 1). More detailed information on the selection of cases, the content analysis process, the search for cross-case patterns and the shaped hypothesis in the form of a model will be discussed in the following.

3.2. Method application

As in expert interviews, information is based on knowledgeable and reliable experts, their careful selection is of utmost importance (Kaiser, 2014). Gläser and Laudel (2006) further state that experts must have the relevant information at their disposal. Additionally, Bogner et al. (2009) indicate that expert knowledge goes far beyond technical knowledge based on data and facts but include also dimensions like process knowledge and interpretive knowledge ("know why"). In this paper's case, additional requirements for experts were set:

- The expert is/was tightly involved with the implementation of RPA during several stages.
- The expert disposes of a wide range of information and expertise about organizational structure and processes.
- The expert is willing to critically reflect on the RPA implementation process and its current role within the organization.

Combining limitations of availability, reliability, and willingness to participate with the three casespecific requirements, eight experts from four different service organizations could be interviewed. Their main characteristics are summarized in the following. In order to keep the participating experts and their corresponding employers unidentifiable, organization characteristics cannot be specified further.

Table 2. Characterization of interviewed experts

Expert	*Role*	*Organization*
A1	Leader ICT Automation and Monitoring	A Swiss Private Hospital Group (A)
A2	Business Analyst — Controlling and Reporting	A Swiss Private Hospital Group (A)
B1	Leader Innovation Management	A Swiss Bank Group (cooperative, B)
B2	Software Engineer — RPA Specialist	A Swiss Bank Group (cooperative, B)
B3	Leader Strategic Process Management	A Swiss Bank Group (cooperative, B)
C1	Business Engineer — Product Owner Robotics	A Swiss universal bank (C)
C2	DevOps Engineer RPA	A Swiss universal bank (C)
D1	Head Process Services and Robotics	A Swiss private bank (D)

After having selected suitable cases in the form of four service organizations and belonging experts, the interview design represents a second important methodological building block of this multiple case study. Kaiser (2014) defines the main purpose of the interview guide to be the translation of the research question into interview questions. Due to the practice-oriented selection of interview partners, the interview questions are not designed to directly tackle the research question but rather try to collect central stages, decisions, and organizational characteristics during an RPA implementation, from which the aforementioned maturity elements and success factors could potentially be derived. Therefore, the main intention was to collect experiences rather than concrete suggestions for the maturity model. Conceptually, an adapted version of the interview guide of Frischknecht (2022) was used, which takes these considerations into account. For reasons of simplicity, the interviews were conducted in an online setting over Microsoft Teams and in German, due to all interviewees being native German speakers. After being carried out between October 22, 2022, and January 4, 2023, all of the interviews were also transcribed in English.

Finally, having generated a heterogeneous but information-rich set of data, the qualitative content analysis should systematically analyze and categorize it. Due to the non-suitability of statistical evaluation methods, this step mainly relies on the coding process suggested by Saldana (2012). After immersing in the data to gain a deep understanding of the concept, thematically significant elements were highlighted in a phase of initial coding. These codes were further clearly defined to ensure consistency and understanding and were grouped into related categories, from which the elements of the RPA maturity model should be derived. Switching from descriptive coding to a more analytic form, relationships, connections, and underlying meanings between codes and code families were examined, from which the final theoretical codes could be deduced: Organizational structure, RPA goals, Process handling, Culture and technology. Already taking the form of a maturity model's potential categories and elements, these final codes and their corresponding empirical evidence will be presented as results.

4. RESEARCH RESULTS

As many organizational aspects are interlinked, this also applies to the defined elements presented in the following. Certain topics are therefore addressed several times, especially within the same category, which shows their correlation. Further, the main characteristics and challenges of RPA derived from literature are taken up again and underline their relevance. The citation of expert statements follows the letter allocation defined in subsection 3.2.

4.1. Organizational structure

4.1.1. RPA initiation

When looking at the emergence of the idea to use RPA within the interviewed organizations, it is often based on interest originating directly from or being carried to upper management. RPA was first brought up at (A) due to the interest of the CFO, seeing it as a quick way to save costs. A more IT-involved approach took place at (B): In the first attempt, RPA was an impulse from the Innovation Lab which was directly attached to the CEO, in collaboration with the IT department. After not finding its way into the official IT strategy, RPA came up again due to developers being dissatisfied with Test Automation, this time being supported by the CIO (B2). At (D), several interested individuals caused the attention and conviction of the CEO, starting off the RPA implementation. Worth mentioning is also the influence of consulting and marketing firms, *"who have pushed the topic a lot due to its newness"* (D1). RPA can therefore become relevant through the initiative of individuals or groups, but does always rely on support from the C-suite.

4.1.2. Strategy

Especially the insights from (A) and (B), where the first RPA steps were not as successful as intended, highlight the importance of making RPA a fixed part of the IT strategy. According to A2, this includes *"sitting down with the infrastructure and application managers, clarifying the scope, reviewing the infrastructure and clean it up on a technological level, and then start with the RPA implementation"*, and supports planning, collaboration, and preventing future problems (see following aspects). The defined scope of RPA greatly influences its strategical positioning: *"Currently it (RPA) is running on the side. But you can feel that they want to tackle the whole thing a bit more strategically"* (C1). The experts' experiences allow to conclude that RPA should neither be a purely business-driven project nor an exclusively IT-based approach (A2, B1, B2, B3). If business and IT are strategically combined from the start, the arising need for consolidating streams at a later stage can be avoided (A2). As pointed out by B1 and C2, deciding on a governance model defines the appropriate framework conditions for RPA use and is critical for the achievement of benefits intended by IT strategies. Strategical RPA decisions are therefore a key area where organizations often rely on consulting external partners: *"The development of a Governance and IT Security ..., we did this with a consulting firm"* (C2).

4.1.3. Roles and responsibilities

Across the explored organizations, there exist many structural differences, closely connected to the grade of strategical involvement of RPA. As mentioned by B1, planning an RPA deployment leads to the emergence of a wide variety of questions: *"Who runs that? Who checks certain implementations to ensures that, for example, data protection is not violated?"*. Even though at (B), RPA is driven completely out of IT in collaboration with the strategic process management, B2 suggests the establishment of a center of competence/ excellence (CoE) to answer these questions. The CoE involvement of IT, process management, and business analysts should define clear stakeholder roles and facilitate a strategical inclusion of RPA (B1). Especially when scaling RPA, establishing a CoE seems to be inevitable (A1). As the case of (C) and (D) shows, RPA can also be successful when being based on a small RPA team, which takes care of all RPA-related aspects, but still represents a rather low level of strategical involvement. *"We have a CoE. This consists of me and my IT colleague. In Switzerland, we take care of new developments, support, maintenance, and infrastructure. This is all with us"* (C1). The risk of having unclearly defined roles can lead to a lack of organizational responsibility and the emergence of scaling issues, which should therefore be counteracted with the establishment of a real CoE (C2). On a platform level, involving and handing responsibility to employees who know the details and the people behind a process to be automated, is considered very important, assuming that their tasks are defined in a clear role: *"The roles of the platform follow a strict separation of powers. There exists a departmental, an applicational, and an operational manager"* (C2). A key problem arising from responsibilities is the one of having many people involved in the automation of a specific process (B3): *"We have a responsible person for every main and sub-process. This means that we have to talk to many people when automating something. ... even if this person is far away from the process, they have a certain entitlement for information"* (C3). If handing this responsibility to the CoE, the increased effort of informing and convincing people can be reduced.

4.2. RPA goals

4.2.1. Motivation and expectations

Expectations regarding RPA can differ remarkably among different stakeholder groups, especially between C-suite executives and RPA users. As mentioned by A1, upper management is often focused on cost savings: *"Of course, management has great expectations of the project, because it's simple, it doesn't need IT anymore. Anyone can optimize and automate the process, and costs are saved"*. From a more technical client perspective, the final goal is similar but follows a different reasoning: Not only should RPA enable cost savings within the automated processes, but also save valuable and coveted IT resources through the automation relocation to the end user: *"... to validate and test the topic very strongly from the end user's point of view, with a vision of the future, in which valuable and sought-after IT resources will not have to laboriously analyze the automation topic again and again and then build complex software, but that this could be outsourced very strongly to the end user. That was certainly a main driver, the vision, today we would call that Low-Code ..."* (B1). Apart from these general motivations, all experts agree on how RPA benefits should look like from a user perspective: The main goal should be defined as capacity enlargement through automating repetitive and tedious processes and transfer the user capabilities to more valuable actions, rather than simply saving costs. *"We really extend the capabilities by freeing them (employees) from stupid repetitive work. This is basically the best case. The second thing is risk reduction"* (D1). RPA therefore focuses on employee relief instead of replacement during times of increased workload. As RPA is mostly not considered a sustainable solution compared to interfaces in the underlying IT infrastructure, it should act as an optimal transition tool, *"so that people can compensate for growth with existing resources until a sustainable solution is in place"* (D1). The relief is thus intended to enable better compliance with service-level agreements

(SLAs), with employees being able to take on more meaningful activities (C1). C2 accurately summarizes the mentioned main objectives and expectations of RPA use: *"The promise of deep time to market, low cost, employee relief, and increased process quality, with minimal dependence on traditional IT"*.

4.2.2. Benefit measurement

Across the explored organizations, the way of measuring how well expectations are met differs quite in extensiveness. When first testing RPA at (B)'s Innovation Lab, time savings of automated processes were simply calculated using an internal cost rate to measure total savings (B1). In addition to that, (A) further considered the effort of implementation with the end users: *"There is an initial outlay that I would not be able to quantify in number of days. But the goal of such an operation should be that less effort on the part of the client should be necessary in the future"* (A2). This return on investment (ROI) approach was also followed by (B) when scaling RPA later on: *"Today, we effectively calculate the ROI on employee time savings and then scale that up to a year, ... with the claim that every bot developed has an ROI of 1.5 at the minimum"* (B2). The interviews at (C) allowed to reveal a more advanced form of benefit measurement. Quantitatively, the amount of saved time is measured using full time equivalents (FTEs). In addition, the extent to which SLAs can be better adhered to is noted. On the qualitative side, *"the error-proneness of the processes is reasonably shown by the reporting of the time spent on the correction of errors"* (C2). Nonetheless, there exists remaining potential to measure less obvious benefits like, e.g., employee motivation. As mentioned by C1, it is not only essential to measure RPA benefits during its use but also to assess pre-implementation benefits over other technologies. Being a transition solution, the number of man-days required for automating a process should always be compared with traditional IT solutions in order to detect further cost savings.

4.3. Process handling

4.3.1. Proof of concepts and pilots

In order to specify expectations of RPA and generate a base of trust in the technology, proof of concepts (POCs) can be very valuable, especially for increasing the success probability of a subsequent pilot program. Therefore, it is suggested to have an environment, where room for testing, making mistakes, and learning is provided, without influencing the actual processes: *"If you want to try something (RPA), you need a place where you have a certain jester's license"* (B1). Following the deficit detection mechanisms of PoCs, the following pilot program should be the first interaction of RPA with real-case processes. This also means that PoCs and pilots should be distinguished and not be executed at the same time on a certain process: *"... actually, our PoC became our productive system and this was obviously a mistake"* (A2). As mentioned by B1, *"the first Pilot should have many of the characteristics of an interesting RPA case"* but should not be too interconnected with other organizational areas in order to keep the scope of influence limited. Selecting a suited Pilot shares many characteristics with the general approach towards process selection and automation. Experts agree on the importance of following a bottom-up approach and involving the clients: *"I was convinced that the easiest way would be to build two or three small bots to pass round, and then ideas would come up relatively quick. But everything bottom-up!"* (D1). Provided that the pilot process is suited for RPA use, a bottom-up approach is more likely to ensure that RPA is applied to processes with increased relevance, employee relief is put over cost savings, and motivation among clients is increased.

4.3.2. Process selection

Being the first step in the RPA life cycle, identifying suited processes to automate is a fundamental factor in enabling future success during RPA implementation. Therefore, experts agree on the importance of a careful process selection and their statements lead to the following list of typical RPA process characteristics, which are in line with conclusions from existing literature:

- *Rule-based:* RPA processes should consist as much as possible of rule-based steps in order to allow a minimum of possible process executions and therefore facilitate automation (C2).
- *Repetitive:* RPA processes should be repetitive and performed at a high cadence. The high number of executions allows a maximum of total time saving (B1, B2, C2, D1).
- *Boring:* The repeated content of RPA processes should typically be rather boring and not require much brain power (B1, D1). Especially when automating annoying processes, employees can benefit from increased motivation (B2).
- *Cross-system:* RPA processes can also be identified by spanning over multiple systems, which do not have structural interfaces to each other (B1). This allows RPA to reap cost-saving benefits without requiring fundamental changes in IT infrastructure.
- *Highly manual:* High promise in financial benefit can be a sufficient reason to automate a process, even when none of the previously mentioned characteristics apply (A1). Processes with a generally high amount of manual work should therefore also be considered when selecting RPA processes (B1).

Especially when these characteristics only apply to parts of a process, splitting up processes into sub-processes can be highly beneficial for process efficiency and maintenance effort: *"Stay away from highly complex long bots. Here I would divide the processes and switch them serially, in order to reduce throughput times and complexity"* (D1). After their identification, the processes with the described characteristics should be recorded in a use case library, including their specific properties (B1).

4.3.3. Process design evaluation

Closely connected to process selection, and agreed upon by the experts, is the importance of availability and (re-)evaluation of underlying process designs. Generally speaking, the automation of a process can only be as good as the process itself. It is therefore essential to follow A1's recommendation: *"Requirements Engineering and questioning the processes are the most important things"*.

According to the experts, the collection and understanding of process requirements need to focus on details. As RPA takes over front-end procedures otherwise done by humans, the bot development is based on a key-stroke level (C1). In order to avoid tedious re-adjustments at a development stage, the creation of requirement catalogues for process descriptions is key (A1). This facilitates communication and efficiency when looking for automation potential in a specific department. Furthermore, entry barriers for automation should be reduced, in order to also allow for documentation and assessment of processes in areas where employees face increased workload and do not have too much time to spend on capturing their tasks in detail: *"... what has led to success is that we have intensified the conversation with the client and reduced the entry threshold. "... One film is enough, show us what you do"* (A1). As the availability of process descriptions does not guarantee the processes' efficiency, their current states need to be questioned before automating them. As in the case of (B), the involvement of strategical process management should ensure the efficiency of a process before its automation: *"This is my job, to analyze the process, to look if it is even needed in its current state. Can we simplify the process first or do other solutions exist?"* (B3). In the best case, process enhancement could even omit the need for RPA or point out alternative technologies (see subsection 4.5). Despite the technology's high potential, it should never be used as an end in itself (B1, B2). This beneficial aspect of process documentation and assessment is represented in (A)'s "failed" pilot project: *"Nowadays, I have found a way for me that is manual, but saves me an extremely large amount of time"* (A2).

4.4. Culture

4.4.1. Employee acceptance

Although the importance of culture may often be underestimated compared to factors like process descriptions or IT architecture, it heavily influences RPA success, as it is well put by B2: *"Process descriptions have to be redone anyway, architecture has to be picked up again anyway, but the will and the understanding to use RPA in order to stay competitive is the key success factor"*. As RPA essentially takes over processes otherwise done by humans, ensuring employee acceptance and collaboration is of great importance. The interviewed experts point out several sources of skepticism and ways to handle them. First of all, like with most new ideas, a general division into supporters and detractors is mentioned. If opposition simply arises due to the lack of knowledge about RPA, education can help (C1). When spreading awareness about RPA, it is important to prove points through direct results instead of theoretical benefits, as this is the only way to gain employees' trust: *"The problem are slides. ... We made the experience that with a lot of tool implementations, it does not really happen what is said on the slides. What people want to see, are hard facts"* (B2). It is further helpful to focus on benefits with a high relevance for employees. Demonstrating the potential of RPA to get rid of tedious processes or to help reach SLAs and therefore improving employee satisfaction, is the key to employee acceptance (A2, (B), C1, D1). *"The more time passed, the less failures we had, and the more time we saved for employees, the more people supported RPA who opposed it before"* (B2). If employees are directly involved in the process of automation, they cannot only deliver helpful insights (see subsection 4.3) but also directly experience the benefits of RPA. This however requires a functioning process automation in order to not foster distrust in the technology due to increased employee workload: *"In the beginning, I was definitely optimistic and motivated. But after half a year of always giving inputs regarding potential improvements, one starts to ask himself: How much more effort is needed to make this stuff work!"* (A1). Good communication and integration of clients is especially helpful to show RPA's purpose of relieving employees rather than replacing them (A2).

4.4.2. IT skepticism

Across the interviewed service companies, IT architects are described as being very skeptical about the introduction of RPA at first. On the one hand, they would often see the technology as a game, which is not able to deliver too many benefits (B2, C1, C2). On the other hand, RPA is still a rather new automation tool which does not provide a sustainable, interface-based solution. Even when RPA is assessed to be the most suited one, other traditional solutions are often preferred by IT: *"There exists fear that RPA will prevent sustainable solutions because the willingness to pay will fall away due to the lack of need"* (C2). C1 bases this skepticism on IT's perception of RPA as a threat to their architectural target image, which prefers interfaces over bots. Similarly, (B) describes IT as an environment, in which stability and sustainability are very important, especially at banks. B3 therefore suggests to make RPA fundamentally business-driven in order to reduce problems when new and traditional technologies meet and generate a protectionism of the topic RPA on the part of the management: *"... people distrust the new technology and don't take it seriously ..., it's not what they've been doing for the last few years, ... and that makes it very difficult to carry the whole thing out of IT"*. As pointed out by B1, the external influence of RPA solutions and their rapid implementation add to the technical skepticism: *"... whenever a system is not designed by a group of developers, there exists skepticism, what exactly is happening? Especially when they see how quickly the solution is ready"*. Similar to general employee acceptance, IT skepticism can best be reduced by demonstrating the potential of RPA. Even though *"evidence can be difficult if the chance for evidence is not given"*, the way to conviction is a *"constant pushy non-backing off"* (B2). Closely connected to aspects of pilot choice and strategy, the experts see small successful cases as the key to spreading the potential of RPA throughout the company and slowly achieving IT acceptance. *"Start small, take small steps, set up good Governance, tell around that it works well, and don't accept a 'No'"* (B2).

4.4.3. Branch specifics

Regarding possible branch-specific influences on RPA, A2 notes that their chemical benchmarks proved that *"the pharmaceutical industry is much* *more successful in less time, because a lot is better documented and structured"*. A2's reasoning also includes stricter legal requirements and the availability of process diagrams with clear responsibilities, which (A) would only have in theory. But this assumption of advantages in more regulated industries (like banking) proves to be only partially true: B1 and B3 agree on having very stringently defined processes in banking, but *"this doesn't necessarily mean that their efficiency is documented"* (B1). This false security based on the availability of information therefore potentially hinders critical reflection. Furthermore, B3 mentions, that *"the regulatory binding process documentation is on another level than the one required for RPA"*. Considering service industries like banking and healthcare, RPA faces great opportunities as well as challenges. On one hand, the importance of providing a reliable service at all times fosters a preference of sustainable and traditional solutions. On the other hand, the industries' low fault tolerance supports RPA's argument of eradicating clerical errors (B3).

4.5. Technology

4.5.1. IT infrastructure

One of the most essential aspects of making RPA work is its underlying IT infrastructure. The influence of problematic systems can be well seen in the example of (A). Still depending on many legacy systems, facing problems of data silos, and having to migrate systems onto their platform, are not the best prerequisites for RPA. As said by A1, when moving in different environments and being in the process of standardizing systems throughout the whole organization, *"this required flexibility cannot be provided from an RPA solution"* (A1). It is therefore not recommended to implement RPA at the same time as changing an organization's core applications as part of a migration process, because even slight environment changes require adaptations in automated processes and increase the re-development time (A2). Even when having a consolidated IT infrastructure at disposal, architectural problems may still arise. Experts mention authorization issues being one of the main ones, due to bots requiring authorizations of technical users but accessing systems over the GUI like normal users (B2, C2, D1). *"That's the new concept, a normal user logs in via GUI, a technical user uses interfaces. We are right in between"* (B2). Solving issues of facilitated authorization, which may also require changes in policies, and having a standardized system environment without frequent changes should therefore be ensured before implementing RPA.

4.5.2. RPA assessment

Even though this paper focuses explicitly on RPA, expert opinions agree on the importance of not looking at RPA in an isolated way. Many elements of RPA can already be found in other automation topics which follow a different purpose, e.g., of an insular solution (A2, B2). Despite its trend, RPA should not be a prioritized solution. Due to the mentioned sustainability reasons, interface-based solutions within applications are generally preferred, followed by solutions based on business process model and notation (BPMN) tools like Camunda (B2). *"We are now also looking more closely at whether RPA is the right solution. Can't SAP do this better via API's and interfaces?"* (A2). This approach generally ensures that RPA does not act as a crutch and legitimization for poorly designed processes but also neglects other influences which may justify using RPA over more sustainable solutions. *"Good process design requires time and effort. ... When is this trade-off better and faster than the use of a 'crutch'? Because it requires existing infrastructure!"* (B1). Especially when developing a solution in the source systems takes a lot of time, RPA should be considered as a fast way to solve specific problems, maybe even in the long term (B1). *"Temporary solutions often last longer than you think, so it's better to create temporary solutions than to leave users out in the cold"* (B1). The experts' clear suggestion is therefore to challenge RPA always with other solutions and not consider it singularly but rather in collaboration or supplementation with other solutions.

4.5.3. Automation future

During the interviews, most experts also came to talk about other innovative technologies and the future of automation. Considering the case of RPA, the goal is a shift in the direction of citizen development in order to give more power to the end user (B1). This low-code solution is gaining increased relevance, especially through Microsoft Power Automate (A2, B2). B2 also mentions citizen development in a hub and spoke system, representing a new form of CoE. Besides the use of RPA, experts mention a general move towards hyper-automation, which is in line with a non-singular use of RPA: especially process mining is of great interest (C1, C2). Together with other technologies like natural language processing (NLP), machine learning (ML), or computer vision, the goal would be the *"situational use of all the different tools from the hyper automation toolbox"* (C2).

5. DISCUSSION OF RESULTS

Considering the advantages and disadvantages of existing maturity models and examining current literature on RPA benefits and challenges, the first general requirements for a new RPA maturity model could be concluded (see subsections 2.1 and 2.2). Coding for key take-aways and conclusions from automation expert interviews among four Swiss service companies via a qualitative content analysis adds to a clearer framework by raising relevant areas of importance and highlighting critical influences on success or failure (see Sections 3, 4). From this combination of literature and qualitative research, the RPA maturity model for service companies emerged. It consists of four main dimensions, each of which can be described with several organizational elements (Figure 2). All organizational elements and their characteristics are concluded from and supported by aforementioned empirical evidence, except for data security which is completely derived from theory.

The suggested model is therefore much more extensive and theoretically grounded than existing models (see subsection 2.2). It follows an academic approach by considering and including elements of traditional maturity models (e.g., the maturity levels of the CMM, see subsection 2.2), but is also supported by a nonmarketing-oriented influence of practical evidence. Furthermore, the model can be applied throughout the whole RPA life cycle by focusing on RPA readiness and prerequisites rather than specific benefits and desired outcomes of this technology. The RPA maturity model also differs from existing models in its scope: Even though its application is restricted to service companies, this enables the model to be much more specific and accurate, even if it may only be for this industry.

The maturity of the 15 elements is assessed using three levels, reaching from *initial* through *integrated* to *optimized*. The *initial* level generally describes RPA as a potentially working solution, which would however not be based on a stable and promising foundation and is likely to face many challenges through lacking organizational adaptation. *Integrated* maturity is defined by increased efforts to consider and include RPA requirements and therefore includes promising organizational characteristics which greatly increase the probability of implementing RPA successfully. In order to reach an *optimized* level of maturity, organizations require additional knowledge and a future-oriented perspective, in order to not only implement RPA smoothly but also take its far-reaching impacts and further development into account.

The model's assessment of 15 total elements leads to a final maturity score defining an organization's position on their way to RPA readiness. These 15 chosen elements and their development along the three maturity stages are presented in the following.

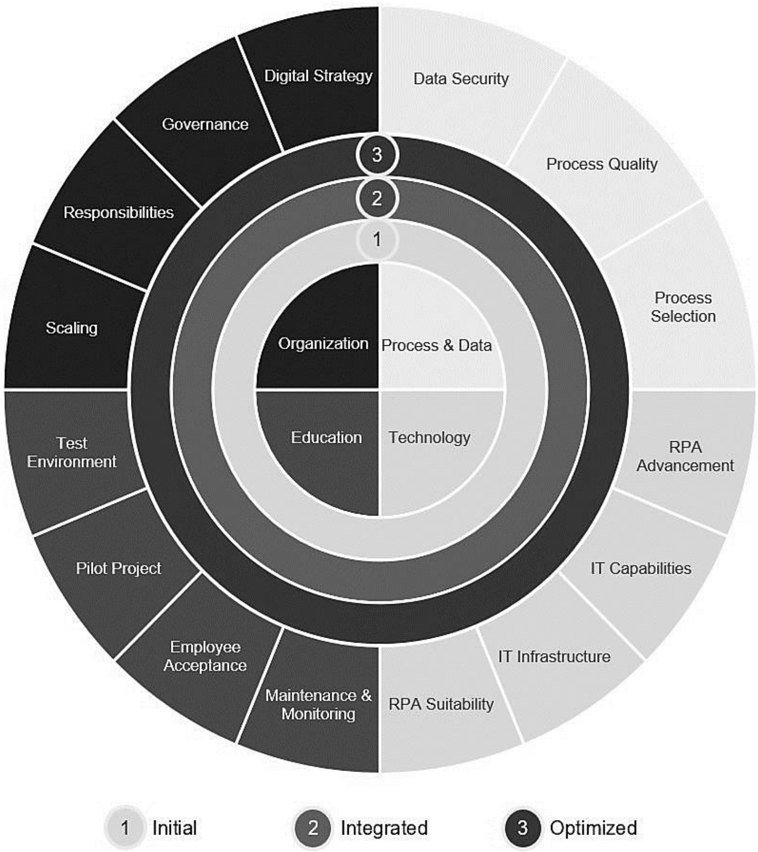
5.1. Organization

Digital strategy: The level of integrating RPA into a company's (long-term) digital strategy represents its involvement in changing business models. Strategical inclusion requires preparation and commitment towards the new technology. Only when taking on a clear role within the digital strategy, RPA can support transformational processes and ensure a mature usage which is in line with organizational goals.

Governance: Maturely selecting a governance model describes the level of how reasoned and specific this choice is. When RPA is part of the digital strategy, the governance model should form a regulatory framework which interlocks IT with strategical elements. With increased maturity, the chosen structures, policies, and procedures therefore ensure the improved alignment of RPA projects with an organization's objectives.

Responsibilities: Regardless of their hierarchical position, if the deployment of RPA is mainly due to inputs of individuals, the maturity is low, even if these individuals are very capable (see CMM). When striving for higher maturity, it is therefore essential to clearly define roles and responsibilities for all stakeholders. Furthermore, the organization should establish a CoE which fosters RPA across the organization, collects and distributes knowledge and resources, and depends less on distributed process responsibilities.

Figure 2. Dimensions and elements of the RPA maturity model



Scaling: Tightly coupled with strategy and governance is the aspect of scaling the role of RPA. While UiPath's model equates increased RPA maturity with wider usage across the whole organization, this model suggests that maturity depends on how precisely the scale of usage is defined, independent from the scale itself. No matter if, e.g., a company uses RPA only in the financial department of one branch or for a specific financial process across all branches, maturity can be high in both cases as long as it is scaled properly and in line with the governance model. Depending on the planned scaling, realistic expectations and main goals of RPA usage should be defined.

5.2. Education

Test environment: At a low level of maturity, PoCs are directly executed on organizational use cases, mostly seemingly easy ones. On the other hand, testing RPA in a separate environment allows for mistakes, continuous improvement and learning. Furthermore, this leads to a smoother delivery of more advanced PoCs and therefore keeps motivation and acceptance of the technology at a higher level.

Pilot project: Even when being able to test RPA in a separate environment and thereby increasing the probability of a successful implementation, the choice of an initial set of pilot processes remains essential. Increased maturity in choosing a pilot means selecting a suited level of difficulty while not stretching across too many information systems and involved clients. The pilot is not supposed to show the potential of RPA as this should have been assessed before. It is rather a tool to make employees familiar with RPA, measure its efficiency of meeting expectations in an organizational context, and examine readiness for next steps.

Employee acceptance: A vital aspect when talking about automation and bots is not to forget the essential roles of employees. Even though RPA takes over repetitive tasks from employees, an awareness of collaboration instead of replacement must be created within the organization. Increased maturity also requires that people are genuinely relieved rather than having to take on additional work. Nevertheless, a certain level of employee engagement is important to consolidate RPA's position and provides an important source of feedback.

Maintenance and monitoring: Having successfully set up RPA in processes does in no way terminate its implementation but rather adds a new focus area: As front-end applications can change frequently and RPA is not able to automatically adapt to new circumstances, the bots' actions need to be monitored and maintained continuously. With increased maturity, adaptations and improvements can be provided in time due to RPA's organizational integration which enables a clear flow of information. The extensive measurement of benefits continuously re-assesses the use of RPA and prevents it from being an end in itself.

5.3. Technology

RPA suitability: Maturely assessing RPA requires the consideration of alternative technologies and the acceptance of RPA's limitations. Especially when comparing RPA to more traditional system integration on the back end (e.g., through APIs), the organizational structure and vision have to be kept in mind. Even though RPA can be a cheap and fast solution for integrating legacy systems on the front end, it is not technologically sustainable and requires constant adaption to changes, e.g., in masks. Maturity can therefore emerge from considering different solutions, assess their benefits and downfalls, and eventually benefit from their conjunction.

IT infrastructure: Closely related to the assessment of RPA suitability is the topic of IT infrastructure. Automated processes can only be as good as their underlying infrastructure and it is therefore essential to build a fitting foundation for performance. A low level of maturity is characterized by directly implementing RPA on existing infrastructure without thoroughly developing connective and integrative strategies beforehand. Especially when facing data migration within system implementation, upgrade, or consolidation, a stable and RPA-fostering IT infrastructure is essential for avoiding data silos and bot performance issues.

IT capabilities: Not only is RPA maturity defined by the level of IT infrastructure but also its deliverable capabilities. These are mainly influenced by skilled employees, their appropriate positioning, and support of the technology. Even when having clearly defined internal roles and responsibilities (see subsection 5.1), high maturity can only be reached when being able to rely on competence within the own organization as well as the supplier, and building constructive communication and collaboration channels between the two.

RPA advancement: Even when RPA is still a new technology in an organization, its improvement and potential replacement should already be a topic nonetheless. Especially through client feedback and monitoring, creating innovative use cases and combining RPA with other technologies distinguishes a mature organization. Options like further developing RPA towards citizen development or focusing on ML should be considered continuously.

5.4. Process and data

Process selection: Obviously, certain processes are much more suited for RPA automation than others. The more mature an organization is, the more comprehensive its assessment of processes and their RPA fit. With low maturity, general factors like error proneness and possible cost savings are considered for specific processes. Higher maturity can only be achieved by taking less obvious factors like the likelihood of process changes or the influence of automation on employees into account while defining clear use cases.

Process quality: Similar to how the quality of automation depends on its underlying technical infrastructure, RPA can only be as good as the quality of the processes and the availability of their documentation. At a low level of maturity, current process documentations are not questioned enough regarding their efficiency and timeliness. With higher maturity, well-working business process management (BPM) should ensure an ideal design of the processes to be automated. In the best case, a drastic increase in efficiency due to the re-assessment of a process design may even make the use of RPA obsolete.

Data security: In order to avoid security issues due to bugs or deceitful programming, RPA requires controlled release cycles. Negative impact can occur through compromised data stores, inaccurate transactions, exposure to confidential or restricted information or compliance risk (Sutherland, 2017). Maturing in data security is not just about making sure that processes work in the same way after introducing new software, upgrades, or patches to RPA tools or connected solutions. It also includes the delineation of sign-ons and access management between differing job roles, and between robots and humans, so that appropriate access is controlled and distinguishable (Syed & Wynn, 2020).

5.5. Summary of model

The four dimensions and a total of 15 elements are not able to capture all the success factors of an RPA implementation and conclusively assess the maturity of an organization. Nevertheless, the interrelated elements cover a large part of the essential organizational characteristics that influence RPA maturity. After having explained the role of each element in its context, Table 3 should now provide an extended overview and facilitate orientation on the RPA maturity scale.

The summary provides a simplified overview of possible RPA states within an organization, differing in maturity and area of interest. It can help the user navigate the complex world of RPA applications and assess the current organizational state. The model's progress-oriented approach, combined with a theoretically and empirically sound knowledge base, results in a unique model for assessing RPA readiness. Table 3 therefore describes the maturity of organizational elements using typical characteristics derived from expert interviews which serve as suggestions to reach increased maturity rather than requirements during application of the model.

Table 3. Element characteristics along the three RPA maturity levels

	Element	*Initial*	*Integrated*	*Optimized*
Organization	*Digital strategy*	RPA is not part of overall digital strategy, runs on the side	In some aspects, RPA is influencing short-term strategy	RPA is fully integrated into a longterm strategy
	Governance	Include RPA into existing IT governance	Discuss various RPA governance models and select suited one	RPA governance model aligned with strategical IT goals
	Responsibilities	RPA performance relies on capable individuals, roles yet to be defined	Small RPA teams are formed, taking over all RPA-related tasks	Established CoE with clearly defined roles & responsibilities
	Scaling	Automation interest in a specific area of organization, lack of vision	More thought put into scaling of RPA, final outcome still open	Clear vision and scaling of RPA, realistic expectations
Education	*Test environment*	PoCs directly on use cases that seem simple	Finding PoC trade-off between process relevance and simplicity	Separate RPA test environment which allows learning and improvement
	Pilot project	Top-down selection of pilot processes with high possible savings	Assess client willingness and process suitability for RPA pilot	Bottom-up pilot processes selection, integrating but not straining clients
	Employee acceptance	Spreadinginformation about RPA to create awareness	Delivering hard facts ensures employee relief instead of replacement	Integration of employees in automation process leads to support and motivation
	Maintenance & monitoring	Measure simple cost benefits and fix occurring errors	Increased maintenance allows anticipation of changes and less time loss	Continuous improvement and reevaluation of RPA use, measure wide variety of benefits
Technology	*RPA suitability*	Existing potential for process optimization and time savings	RPA considered useful and applied whenever possible	Challenge RPA with other technologies for best automation fit, prioritize sustainable solutions
	IT infrastructure	Automate processes on top of existing IT systems	Ensure coherent and stable infrastructure before automation	RPA efficiently applied as interim solution, not justifying bad infrastructure
	IT capabilities	Skepticism towards RPA, existing automation know-how as base	Internal creation of RPA knowledge, show advantages over interface-based solutions	Competence and collaboration with partners, IT supports RPA
	RPA advancement	RPA is established automation tool within organization	Combining RPA with other automation tools and innovations	Focus on findingtechnology which replaces RPA on the longterm
Process & Data	*Process selection*	Automate as many processes as possible with RPA-suited characteristics	Define a clear use case library in collaboration with clients, standardized automation approach	Consider branch-specific characteristics and splitting up processes
	Process quality	Use available process documentations as a base for automation	Question current process execution and improve it, well-working BPM	Clear up process responsibility issues, reevaluate RPA necessity
	Data security	Ensure that automation continues to work after changes	Introduce new IT security coverage for RPA, clarify accessibility right issues	Adapt and improve policies, make access controlled and distinguishable

6. CONCLUSION

RPA is gaining increased relevance among service organizations, driven by the promise of rapidly allowing for efficiency gains and cost savings. These incentives and the advantage of this technology in not requiring fundamental infrastructure changes, are pushing many companies to quickly implement RPA. However, many organizational characteristics influence the exploitation of RPA potential and should therefore be assessed in depth, at best before implementing. Maturity models are a widely used tool that follow this purpose of evaluating an organization's current position in regard to a specific topic.

In the context of RPA, existing literature about maturity models shows that they not only lack in number, but also in analytical deepness, broad applicability, or simplicity. This paper therefore aims to develop an advanced maturity model to help service companies assess their RPA readiness when starting implementation or room for improvement when already using RPA. In addition to the examination of literature, the conduction of eight interviews with automation experts from four Swiss service companies provided insights into a variety of RPA cases. Categorizing the mentioned strategies, challenges, and experiences and merging them with typical elements of maturity models resulted in the development of a new RPA maturity model for service companies. Being divided into dimensions of *organization*, *education*, *technology*, and *process and data*, a total of 15 organizational RPA elements can range from *initial*, through *integrated*, to *optimized* on a maturity scale. Defining typical element characteristics on corresponding maturity levels further facilitates the maturity assessment.

Even though the developed maturity model significantly adds value to the small collection of RPA models by focusing on profoundness and organizational width while maintaining simplicity, it also faces several limitations. Through conducting qualitative research by only interviewing experts from a heterogeneous group in the Swiss service sector, the model lacks theoretical validity and generalizability. Even though the model can be expected to be of help in a variety of branches and countries, evidence for this statement would require further validation on specific use cases. Considering the words of Box (1979), where "essentially, all models are wrong, but some are useful" (p. 202), the RPA maturity model is not able to consider all organization-specific influences on RPA success but intends to facilitate the readiness assessment and implementation as extensively as possible.

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