



# Challenges Faced by Enterprises in Digital Transformation -Based on RPA Technology

Yang Sun

Beijing Technology and Business University, Beijing, China

e-mail: Sunyang1856@163.com

**Abstract.** The surge in enterprise digital transformation has led to a significant increase in the adoption of robot process automation (RPA) as an automated transformation tool, garnering substantial attention and experiencing exponential growth. Currently, the research literature on RPA technology has delved into its principles, standard systems, and applications in certain industries. However, the existing literature is overly professionalization and focuses on RPA in the financial domain, making it unsuitable for first-time users to gain a comprehensive understanding of this emerging technology concept and its related applications, and to develop an enterprise-wide RPA strategy accordingly. And when it comes to RPA products, many users define RPA as a patching tool, without a systematic plan for the use of RPA, and use it casually in the business, which is not conducive to the healthy development of RPA in the enterprise. Therefore, this article will explain the definition of RPA from a beginner's perspective. After fully understanding this basic information, we will go deeper into the inner workings of RPA, analyze the application value of this technology for enterprises, Finally, we will introduce the current status of the RPA industry from three aspects, application scenarios, business models, and Eco-Operations. This comprehensive approach aims to formulate a robust RPA strategy for enterprises, facilitating their digital transformation and fostering the growth of the digital economy.

**Keywords:** RPA, Digital transformation, Literature review.

## 1 Introduction

The fourth industrial revolution, characterized by the emergence of artificial intelligence, robotics, and the Internet of Things, is currently gaining momentum. As we progress towards an era defined by intelligent automation, robot process automation (RPA) serves as a crucial infrastructure for enterprises, offering extensive market prospects<sup>[1]</sup>. But there is an interesting paradox. On the one hand, enterprises clearly recognize the importance of digital transformation, on the other hand, enterprises pay little attention to how to carry out digital transformation. The use of RPA is not a matter of a single department, but needs to be built from an enterprise-level perspective to build a complete RPA strategy<sup>[1]</sup>. The start of intelligent automation projects not only needs the participation of the actual business department, but also needs the support of the senior

© The Author(s) 2024

L. Chang et al. (eds.), *Proceedings of the 2024 8th International Seminar on Education, Management and Social Sciences (ISEMSS 2024)*, Advances in Social Science, Education and Humanities Research 867,

[https://doi.org/10.2991/978-2-38476-297-2\\_108](https://doi.org/10.2991/978-2-38476-297-2_108)

management. If the decision-making level does not have the grasp of RPA projects, it is difficult for the IT department and the business department to form an efficient cooperation, and it is difficult to promote the implementation and application of RPA<sup>[2]</sup>. In addition, RPA is not a one-time project. In the actual operation process of RPA projects, in addition to the process design for known problems at the early stage, it is also necessary to continuously observe the process operation effect and further optimize it. In the process landing link, it is necessary to continuously analyze the rationality of the rest of the process, carry out more in-depth analysis of enterprise processes, and dig out more process optimization opportunities. The operation and maintenance of existing processes should also be given due attention simultaneously<sup>[3]</sup>. Therefore, the enterprise-level RPA strategy is the key to the success of enterprise business process automation. Unfortunately, this is often missing in failed enterprises. In addition, almost all RPA vendors in the product promotion, will introduce its product ease of use, and further will be combined with low-code and other capabilities to promote the use of low-code or even no code, these publicity in the early stage does attract the attention of the enterprise, after all, from the perspective of the enterprise, the purchase of RPA is in order to save manpower, rather than in order to maintain the use of RPA and then a large number of newly recruited people. And many enterprises gave up after a shallow taste of RPA, one of the core reasons is that the use of RPA is much more difficult than expected<sup>[4]</sup>. The expectation is that business people will be able to fully utilize RPA after a week or two of training and automate business processes with great efficiency. The fact is that no matter how many business people will seriously study the RPA training course, even after a period of rigorous training and exams, in the face of complex processes, still need the vendor's hand-held support to complete the process development, but most of the problems faced by the process of digital transformation of the enterprise come from the complexity of the process<sup>[5]</sup>. This means that, in the process of practical digital transformation business automation, relying solely on the enterprise's own capabilities, can not be realized in the short term independent support, and enterprises need to make a certain amount of investment in order to maintain the continued use of RPA and operation and maintenance. As a result, the barriers to the use of RPA technology really exist to keep organizations from developing enterprise-level RPA strategies<sup>[5]</sup>. The purpose of this paper is to comprehensively explain robotic process automation, evaluate RPA - based automation solutions across industries, fill in the gaps in current research, and help non-technical people in organizations to fully understand that emerging technology that's underway, which in turn will drive the development of a complete RPA strategy for the organizations concerned, thus facilitating the development of seamless digital processes within the organization and driving the growth of the global digital economy.

## 2 Definition of RPA

RPA, as a tool for digital transformation, is a technology that realizes workflow automation by simulating and enhancing the interaction between humans and computers,

which has been widely used in various business systems and is the trend of office innovation and development in the future. The value of RPA for the era of digital economy can be likened to the value of robots for the era of industrial economy<sup>[6]</sup>. With the common daily life of the "physical robot" is different, RPA is essentially a kind of specific instructions to complete the work of the software, through the simulation of the keyboard, mouse and other manual operations to achieve office operation automation, especially good at clicking, copying, pasting, typing and other fixed rules and high repetitive office content, and more efficient, more agile, more accurate than humans<sup>[7]</sup>. The maintenance cost depends on the operation environment, and the overall cost is much lower than the labor cost, which has the advantage of high efficiency and low cost<sup>[8]</sup>.

IEEE believes that RPA is to develop business rules and activity orchestration process through software technology, using one or more disconnected software systems to collaborate to complete a set of process activities, transactions and tasks, while requiring manual management of exceptions to ensure the final delivery results and services<sup>[9]</sup>.

IRPA AI considers RPA to be a technology application model that enables robotic software or robots to capture and interpret information from existing applications, handle the operation of disparate systems, et.

Gartner in its 2018 AI Technology Curve report states: RPA integrates the capabilities of user interface recognition and workflow execution, which mimics the process of manually operating a computer by simulating a mouse and keyboard to drive and execute an application system. Sometimes it is designed to automate processing between applications<sup>[10]</sup>.

IBM states in its 2017 Market Research and Vision Trends report, RPA is a set of technologies that utilize software to execute business processes, following human execution rules and operating processes to perform the same. RPA technology can reduce human inputs in the workplace to avoid human errors, processing time will be greatly reduced, and human beings can be converted to a more high-level work environment<sup>[11]</sup>.

Based on the above different definitions of RPA given by different organizations, we have a preliminary understanding of RPA, this article does not intend to redefine RPA, but we need to know exactly what processes can be automated by RPA? We have already mentioned the difference between RPA and the common entity robots in the real physical world, it is a robot program running in a computer, so the processes that can be realized must necessarily be handled by the computer<sup>[12]</sup>, while the real life people's behavior will not be able to use RPA to replace, such as the leader's handwritten signature on the paper documents, retrieve the printed documents, hand over the mailed parcels to the delivery personnel etc<sup>[13]</sup>. But RPA can replace handwritten signatures by enabling automated electronic signatures and checks. If the enterprise has not yet realized the paperless office, at least RPA can do to send the documents to be printed to the printer automatically, and automatically determine the success of printing or not. Although RPA can not personally deliver packages, but can be in the courier company's system to automatically place an order, and automated to check the real-time status of courier logistics<sup>[13]</sup>.

So, if in a business process, part of the steps are manual computer operations, part of the human behavior in the real world, then it can be said with certainty that the RPA

can only be automated to replace the manual computer operations, but for the physical behavior of human beings can not do anything about it<sup>[14]</sup>, but this time those who have a physical arm and can automatically walk the robot can come in handy.

Since RPA is the use of programs to simulate human behavior, then these processes must have clear business rules, clear behavioral logic, in order to be converted into executable software programs<sup>[15]</sup>. Currently RPA is mainly used in the commercial field for business users. The business world is actually unlike people's daily lives, where most behaviors are governed by emotions. In the business world, 90% of business behaviors have logical rules to follow, especially the operation process of the front-line business personnel, it is more necessary to strictly comply with the company's operating procedures.

RPA application areas mainly include financial accounting, human resources, procurement, supply chain management, etc., such as expense reimbursement, document review, personnel on boarding, issuing certificates, order verification and other processes<sup>[16]</sup>. In addition, not all processes that can be automated should be truly automated. As mentioned in the above several definitions, RPA is intended to deal with process segments that are repeatedly executed and have a high workload<sup>[7]</sup>. In fact, the discussion here is about the need for automation, not about whether RPA can be automated.

First of all, the input-output ratio needs to be considered. Because the most original motivation for using RPA is to replace manual labor and reduce labor costs. This part of the work is costly through manual labor, but the software, implementation and maintenance of RPA is also costly<sup>[18]</sup>, and it needs to be compared to which is less costly.

Secondly, we also need to consider the issue of business flexibility; once RPA solidifies the business process and processing rules, it means that the autonomy of the business staff in the business process will be reduced, which will bring about the problem of business flexibility and the ability of the business staff to respond in a timely manner<sup>[19]</sup>. Of course, we also need to determine whether a process needs to be automated from the dimensions of efficiency, risk, security, IT construction cycle and so on.

It is usually concluded that those repeated and labor-intensive work must be relatively labor-intensive processes, the more people perform such processes, the more the rules will not be easily adjusted, the automation of these processes will usually bring greater business benefits<sup>[20]</sup>. This is why RPA was first applied to outsourcing services and in-house shared centers.

In a nutshell, RPA is suitable for relatively stable business processes that have clear business rules, are performed repeatedly, and have a high volume of business.

### **3 The Value of RPA Applications**

One of the biggest reasons for the birth and development of RPA technology and its predecessor technologies was mankind's aversion to repetitive labor, where repetitive tasks confined a person to a small space and prevented them from realizing their self-

worth. With the further development of RPA technology<sup>[17]</sup>, people seem to find that RPA can be used to do more things, RPA vendors and consulting organizations in the industry are also obsessed with proving that RPA in the process of enterprise automation transformation, what value can be brought, whether it is the native value of cost reduction and efficiency gains, or with the combination of AI to bring the injection of wisdom and empowerment<sup>[21]</sup>, or to open up the data business barriers. In short, RPA for the digital transformation of enterprises, there is a real value. Comprehensive industry vendors landing effect and consulting firms issued by the industry analysis report, this section will be the application of the value of RPA will be introduced .

#### **4 Enhancement of Corporate Efficiency**

The prerequisite for the use of RPA technology is that the user has completed the construction of the information system, the original paper can not let RPA play a valuable role. The establishment of information technology system makes the process and data become standardized, and for some specific scenarios, standardization means repeating according to fixed rules<sup>[22]</sup>. And the pain of the enterprise is that such repetitive business operations are often accompanied by other problems, such as high-volume. Therefore, the common scene is that modern enterprises still have a large number of employees fixed in their workstations day after day to repeat the fixed mouse clicks<sup>[23]</sup>, keyboard input and other operations, boring but skilled.

Regrettably, the upper limit of human ability for business operations is natural, for example, humans can not work 7x24 hours; humans can not get rid of the environment, psychology and other factors that can be seen to maintain the best state of mind; humans can not be a second to complete the eighteen operations and so on, and these operations can be easily done with RPA technology. Therefore, compared to manual operation, RPA technology can significantly improve the efficiency of such business processes in many RPA landing scenarios have been factually verified, according to AsiaInfo incomplete statistics, the efficiency of an average of 5 to 20 times, which for the existence of intensive high-volume repetitive business companies, is a good choice<sup>[24]</sup>. How different types of work cases are automated or processed by humans according to their frequency is shown in Figure 1.

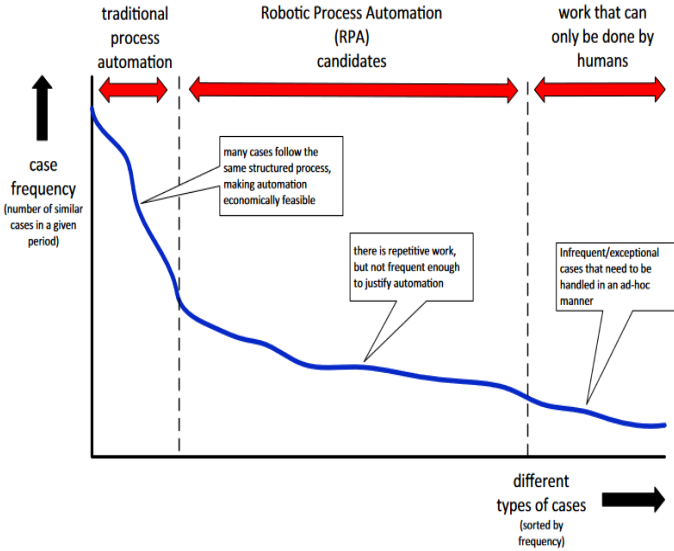


Fig. 1 Positioning RPA

Fig. 1. positioning RPA

## 5 Cost Reduction

Cost reduction is an essential element that RPA vendors cannot possibly lack when promoting their products, as it is one of the native values of RPA technology. The difference lies in the fact that there is no uniform conclusion within the RPA industry as to how much cost reduction there is, with Ernst & Young claiming a 50% to 70% cost savings and IDC reporting a 30% to 60% cost savings<sup>[25]</sup>.

Although RPA users have been questioned, but the good thing is that we questioned only the cost savings figures, but not too many questions about cost reduction. When discussing how much RPA can reduce costs, we must analyze the specific enterprises and scenarios in which RPA has landed. Generally speaking, we need to consider the following factors: labor cost savings, management costs, procurement costs, and efficiency costs<sup>[26]</sup>.

First of all, the labor saving cost, which is inseparable from what we talked about above to improve the efficiency of the work, the improvement of work efficiency and the increase in working hours<sup>[27]</sup>, which inevitably means that the cost of labor to be invested in the operation of this business is reduced<sup>[28]</sup>, this part of the cost of the theoretical savings, but some customers do not have reasonable arrangements for employees to use this part of the time savings, which leads to this part of the savings in cost This is the reason why some enterprises condemn RPA for not bringing significant cost reduction.

Second is the management cost, the introduction of RPA technology is not a particularly easy thing, RPA learning and training in the early stages, RPA process design, as well as the management of the late RPA program<sup>[29]</sup>, is the need to invest in dedicated management, this part of the cost increase must be included in the introduction of the enterprise RPA considerations in the plan<sup>[30]</sup>.

Once again is the procurement cost<sup>[31]</sup>, RPA products and services are necessary inputs, which, together with management costs, constitute the main increase in the cost of RPA technology introduction.

Finally, the cost of benefits is primarily attributed to the significant efficiency gains brought about by RPA. When assessing these benefits, it is important to consider more than just the apparent reduction in labor costs. The impact of completing a task within two days compared to half a month can be vastly different, particularly for companies with financial operations where time equates to money<sup>[32]</sup>. Unfortunately, not all benefits and costs are readily visible, leading some RPA users to unconsciously overlook them<sup>[33]</sup>.

## 6 Data Service Tandem

Enterprises from information technology to the process of digital transformation, not all managers can be far-sighted to see every step of the construction planning, so inevitably, some companies in the process will take some detours. And these detours do bring some trouble to the subsequent business people, a more typical situation is that, in the process of enterprise information technology construction, because of various objective factors lead to the same business needs to go through a number of business systems in order to complete the process, and even between a number of business systems, data and business is cut off<sup>[34]</sup>, can only be carried out manually through the handling of data.

As for why enterprises do not take the initiative to open these business systems, the reasons are very complex, the biggest factor is that the cost of opening is relatively high, many companies choose to continue to endure the slow knife to cut meat, followed by the construction of business systems may not be so cooperative partners<sup>[35]</sup>. RPA provides a new option for enterprises: a bridge that automatically realizes business and data tandem.

By simulating the operation of human employees, RPA can realize the data transportation between different business systems<sup>[36]</sup>, business tandem, improve the continuity of business processing, accelerate the speed of data operation while speeding up the process of business processing.

## 7 State of the Industry for RPA

RPA industry to date has undergone thirty years of development, in the human pursuit of automation of the relentless pursuit of work, derived from such as automation scripts, VBA macro programming and other technologies for the emergence and maturity of the RPA technology to lay the foundation<sup>[37]</sup>, but the RPA technology did not appear

on the sweep of all walks of life, the RPA industry practitioners have spent a lot of time and effort, and gradually promote the maturity of the RPA technology, RPA industry practitioners have spent a lot of time and effort to gradually promote the maturity of RPA technology, and promote the landing of RPA products.

In order to better understand the current status of the RPA industry, this section provides an in-depth analysis at the levels of typical RPA customers, typical business models of RPA companies, and operational construction of RPA companies.

## 8 Typical Scenarios for RPA

The human desire for business automation emerged almost simultaneously with the concept of "business" and continues to drive generations of people towards this goal. Of course, different industries do not have the same degree of desire for business automation, the more cumbersome the business, the operation of the mechanical repetition of the industry, the stronger the demand for automation, such as finance, government, manufacturing and so on<sup>[23]</sup>.

Also for this reason, before the emergence of RPA technology, spontaneous automation exploration occurred in some industries<sup>[38]</sup>, which can be clearly recognized from the development of the RPA industry. However, it is undeniable that these automation explorations and efforts have enabled these industries to have a better automation foundation, which has led to the emergence of RPA technology, the first breakthroughs in the relevant industries and successful promotion.

Of course, to date, RPA technology has become increasingly mature, the use of RPA industry is not only individual industries, RPA has taken root in various industries, in-depth integration into the industry scenarios and business, with business automation to empower thousands of industries. The current industry distribution of typical RPA customers is shown in Figure 2.

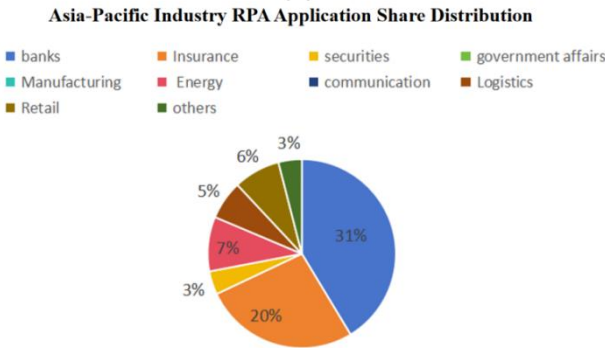


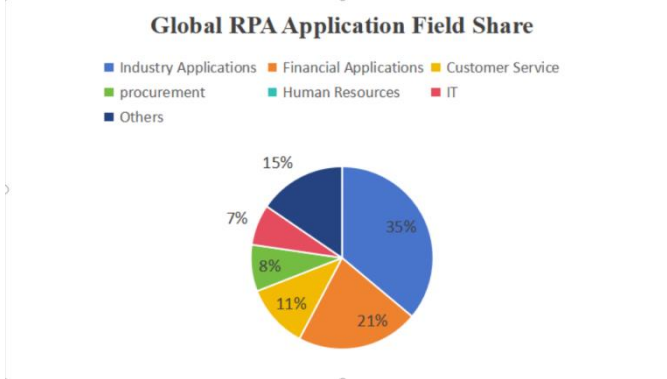
Fig. 2. Asin-Pacific Industry RPA Application Share Distribution

From the perspective of RPA industry application, it is currently concentrated in finance, government affairs, manufacturing, energy, communication, logistics, retail and other industries. Among them, the share of financial industries represented by



banks, insurance and securities is the highest, reaching 54%<sup>[18]</sup>. On the one hand, these industries have heavy business, and their daily work is full of mechanical repetitive labor; on the other hand, these industries have a better automation foundation and better payment capacity, which provide the necessary support for the development of RPA<sup>[40]</sup>.

In addition to the industry-specific business attributes of an enterprise, there are inevitably also general businesses that are separate from the industry attributes<sup>[23]</sup>, such as finance, human resources, IT operations and maintenance, and so on. This constitutes another entry perspective for RPA scenarios: general-purpose applications. From the application field point of view, about 35% of the global applications are industry applications<sup>[21]</sup>, the remaining 65% are general applications. The share of application areas is shown in Figure 3.



**Fig. 3.** Global RPA Application Field Share

At the level of general purpose applications, the highest percentage of applications is in the finance area<sup>[33]</sup>, and when you consider that the number one ranked industry application is also in the financial sector, it is understandable why many RPA firms get their first pot of money from banks<sup>[27]</sup>. In addition to financial applications, customer service, procurement, human resources, IT services, etc. are the main position of enterprises using RPA<sup>[36]</sup>.

In addition, we still need to clearly recognize that although the development of RPA to date, has been a little success in a number of industries or areas mentioned above, but there is still a considerable distance from the overall victory<sup>[27]</sup>. From the stage of development, the current domestic RPA is still in the former middle stage<sup>[38]</sup>, the overall spoon penetration rate for the customer industry is not high<sup>[40]</sup>, the financial industry is currently the highest penetration rate, the overall estimate is only about 30%<sup>[19]</sup>, manufacturing, retail, telecommunications, government and other industries, with the further advancement of the digital transformation, finance, customer service, human resources, procurement and other scenarios are more applications to reach 25% even to 35%<sup>[17]</sup>. However, these are concentrated in the head of the enterprise or sector, for other enterprises or sectors outside the head, the digital transformation is still relatively slow<sup>[15]</sup>. However, these are concentrated in the head enterprises or departments, and for other enterprises or departments outside the head, the digital transformation is still relatively slow, and the imperfect IT infrastructure construction makes the penetration rate of

RPA low<sup>[31]</sup>. Therefore, for RPA enterprises, today is only a stage of victory, for the entire market, there is still a long way to go<sup>[11]</sup>. Domestic RPA penetration rate and typical scenarios of various industries are shown in Figure 4.

Bank	Certificate	Manufacture	Retail	Government	Education
six banks:55% joint-stock bank:45% city commercial bank:30% Agribusiness and others:25% Bank reconciliation Bank tax return Customer Service Assistive Robot credit card collections Data migration of the reminders system Customer account management Automatic report generation Customer whitelist audit Credit Card Online Approval Funding Settlement Cost reimbursement Revenue Files Tax administration	头部: 35% 其他: 25% Clearing operations Asset Management System Custodian System Financial System Regular Inspection	Head office: 30% ERP automation Logistics data automation Data monitoring Chain management Customer Service process Product Pricing Comparison	Head office: 25% Merchant Information Entry Website Import Email Processing Order Data Processing Inventory Management Trade promotion analysis	Head office: 25% Procuratorate documents automatically issued The identify audit of the favoured object Automatic document audit Cross-system data synchronisation	Head office: 25% Automatic generation of class schedules Exam results recognition entry Enrolment Management File Management Activity Arrangement
	Insurance	Communication	Medical	logistics	Estate
	Head office: 35% others: 25% Intelligent Underwriting Customer Service Management Document Submission System Liquidation	Head office: 35% Customer service system information collection Information backup Regular analysis Uploading data Work standardisation Experience precipitation	Head office: 15% Patient Data Processing Physician Reporting Billing Processing Patient Enrollment Medical Insurance Reconciliation	Head office: 15% Automatic Shipping Status Update Transport Management Services Automated Reception	Head office: 10% Owner Information Entry Update Account Information

Fig. 4. RPA Penetration and Typical Scenarios by Industry in China

## 9 Typical business model of RPA

At present, the business revenue of RPA mainly comes from two parts: products and services<sup>[23]</sup>. This is also the main component of the current RPA market size. When analyzing the business model of RPA in a deeper way<sup>[14]</sup>, it can be elaborated from multiple dimensions such as sales channel, paid content and charging mode.

### 9.1 Sales Channels

At present, the main sales channels in the RPA industry are direct sales and channel agents. In the direct sales mode<sup>[24]</sup>, RPA enterprises set up their own sales team to provide products and services directly to end customers<sup>[27]</sup>. In this form, customers can get relatively good manufacturers' services and support. And because RPA is a general ability tool without industry attributes, RPA can empower a hundred industries. But this also brings a problem<sup>[25]</sup>. With the current size and strength of domestic RPA enterprises, direct sales cannot cover all industries. Therefore, in this case, channel agents are a good choice<sup>[36]</sup>.

Channel agents can avoid the maintenance of customer channels by manufacturers and form a stable income. Many top enterprises will adopt a combination of two modes, namely the mode of "direct selling + agency"<sup>[37]</sup>. In this mode, the direct selling team

is responsible for the top customers, providing quality and quantity services, and creating a good benchmark for the channel, which is responsible for the medium and small customer groups<sup>[27]</sup>.

## 9.2 Paid Content

The revenue of RPA enterprises mainly comes from products and services. The products include the traditional designer, controller and manager tri-set<sup>[38]</sup>. In addition, NLP, OCR and other AI capabilities are often sold as products in the form of design components<sup>[39]</sup>, which is the most direct and stable charge for domestic RPA manufacturers at present.

The content of the service itself is mainly divided into two categories, namely training and implementation. The reason for training is that although RPA has always emphasized the convenience of use<sup>[16]</sup>, more than 90% of users cannot independently complete the business process design when they first use it, so training has always been very key in the delivery link of RPA projects. The second is implementation, from product deployment to pilot process assistance development to final project delivery, in this link, the implementation service support of RPA manufacturers is essential<sup>[10]</sup>, so the service income of RPA manufacturers is constituted by man-day investment or overall project settlement.

## 9.3 Charging Mode

The charging model of RPA products is not too different from that of traditional software products, whether it is subscription mode or buyout mode, both are relatively conventional charging methods<sup>[11]</sup>. From the perspective of the current situation of the industry, the top enterprises tend to adopt the subscription mode in terms of charging mode, but the customer level is not willing to accept it. At the same time, because of the current intensification of industry competition<sup>[32]</sup>, the proportion of one-time delivery buyout mode in the current industry transaction projects is constantly increasing<sup>[18]</sup>.

## 10 Typical RPA Ecological Operation

Compared with other software industries, RPA enterprises pay more attention to the construction of user-oriented ecology<sup>[23]</sup>. On the one hand, because the current penetration rate of RPA is still not high, the construction of ecology is helpful for RPA enterprises to promote and advertise externally; on the other hand, because the use of RPA products has objective thresholds<sup>[15]</sup>, it needs continuous learning to achieve the final mastery, and if the process of learning and discussion is completed by human, it is undoubtedly a heavy burden for RPA enterprises<sup>[38]</sup>. The construction of a sound RPA ecological system can not only realize automatic user learning by providing online documents, training and other ways, but also establish the stickiness between enterprises and users, and between users.

Through the analysis of mainstream enterprises in the RPA industry, it can be found that common ecological construction and development include: knowledge base, training certification, online store and other modes<sup>[27]</sup>.

The first is knowledge base. Knowledge base is the most common and relatively low-cost ecological construction scheme. RPA enterprises open their product manuals, notes, development cases and other online documents to their user groups<sup>[36]</sup>.

The second is training certification. The purpose of training certification is that when users learn how to use RPA products, they need to have a clear learning path on the one hand, and on the other hand, they need to be able to test the results of learning. The online training certification system well meets the demands of users<sup>[35]</sup>. Through text courses and video courses, the use of RPA is comprehensively displayed, which greatly reduces the learning cost of users and significantly improves the learning effect<sup>[37]</sup>. However, the actual role of the training certification system is far more than that. The premise of training certification is that there is a certain user base, and users are willing to learn and certification of products<sup>[38]</sup>. Therefore, the training certification actually includes brand building and customer recognition of products. This is why Gartner and other consulting companies will take the training certification users and development partners of enterprises as an important evaluation content when conducting RPA enterprise capacity evaluation.

Compared with the previous ecological construction methods, online stores are more special. Generally speaking<sup>[12]</sup>, the goods provided in the store are components, templates and processes, and users can choose suitable goods to download or purchase. From the perspective of RPA enterprises, it is actually an attempt to explore the balance between ecological construction and product profitability. In this model, RPA enterprises play the role of platforms, and charge fees by formulating platform trading rules. Of course, so far no RPA enterprises have successfully realized the real commercialization of stores<sup>[36]</sup>, but in the foreseeable future, online trading models will create new income sources for RPA enterprises.

## 11 Conclusions

This paper provides an in-depth discussion of the challenges faced in the digital transformation of enterprises and analyses the value and current status of RPA technology as an example. RPA technology, as a process automation tool, can help enterprises improve efficiency, reduce costs, free up human resources, and promote data service collaboration. However, the successful implementation of RPA projects requires the establishment of a data quality checking mechanism to comprehensively check and verify data to ensure its accuracy and reliability. In addition, before implementing RPA, detailed process analyses and assessments should be carried out and appropriate processes should be selected for automation to ensure that the project achieves the desired results. In the future, with the continuous development of RPA technology, enterprises need to continuously pay attention to the latest trends and application cases of RPA technology, and formulate a perfect RPA strategy according to their business needs, so as to promote the digital transformation and sustainable development of enterprises.

This paper only discusses the value and application of RPA technology from the macro level, and has not yet been demonstrated in actual cases<sup>[1]</sup>. In the future, we will further carry out analytical research, case studies, field studies, etc. around the RPA robotics standard system<sup>[5]</sup>, in order to improve the understanding and application of RPA technology, and to help enterprises better formulate the overall RPA strategy, firmly grasp the rare opportunity to develop RPA technology<sup>[28]</sup>, and to promote the digital transformation of the enterprise, and to do a good job of the current business at the same time, and to continue to carry out innovation and breakthroughs in business, to keep up with the future development trend of the industry, and to move forward in a steady and sustainable manner.

## References

1. Herm L V, Janiesch C, Helm A, et al. A framework for implementing robotic process automation projects[J]. *Information Systems and e-Business Management*, 2023, 21(1): 1-35.777.
2. Farinha D, Pereira R, Almeida R. A framework to support Robotic process automation[J]. *Journal of Information Technology*, 2023: 02683962231165066.
3. Costa D S, Mamede H S, da Silva M M. A method for selecting processes for automation with AHP and TOPSIS[J]. *Heliyon*, 2023, 9(3).
4. Felder R A. A Modular Robotic Workcell for Coagulation Analysis[J].
5. Kokina J, Gilleran R, Blanchette S, et al. Accountant as digital innovator: Roles and competencies in the age of automation[J]. *Accounting Horizons*, 2021, 35(1): 153-184.
6. Bowen P L, Rohde F H. *International Journal of Accounting Information Systems*[J]. 2005.
7. Barbar C, Bass P D, Barbar R, et al. Artificial intelligence-driven automation is how we achieve the next level of efficiency in meat processing[J]. *Animal Frontiers*, 2022, 12(2): 56-63.
8. Zhang C, Thomas C, Vasarhelyi M A. Attended process automation in audit: A framework and a demonstration[J]. *Journal of Information Systems*, 2022, 36(2): 101-124.
9. J. G. Enríquez, A. Jiménez-Ramírez, F. J. Domínguez-Mayo and J. A. García-García, "Robotic Process Automation: A Scientific and Industrial Systematic Mapping Study," in *IEEE Access*, vol. 8, pp. 39113-39129, 2020, doi: 10.1109/ACCESS.2020.2974934.keywords: {Robots; Software; Automation; Companies; Systematics;Robotic process automation;RPA; systematic mapping study}
10. Yamamoto T, Hayama H, Hayashi T, et al. Automatic energy-saving operations system using robotic process automation[J]. *Energies*, 2020, 13(9): 2342.
11. Lacity M, Willcocks L. Becoming strategic with intelligent automation[J]. *MIS Quarterly Executive*, 2021, 20(2): 1-14.
12. Nielsen I E, Piyatilake A, Thibbotuwawa A, et al. Benefits realization of robotic process automation (RPA) initiatives in supply chains[J]. *IEEE Access*, 2023.
13. Kregel I, Koch J, Plattfaut R. Beyond the hype: robotic process automation's public perception over time[J]. *Journal of organizational computing and electronic commerce*, 2021, 31(2): 130-150.
14. Choi D, R'bigui H, Cho C. Candidate digital tasks selection methodology for automation with robotic process automation[J]. *Sustainability*, 2021, 13(16): 8980.
15. Parascho S. Construction robotics: From automation to collaboration[J]. *Annual Review of Control, Robotics, and Autonomous Systems*, 2023, 6: 183-204.

16. Asatiani A, Copeland O, Penttinen E. Deciding on the robotic process automation operating model: A checklist for RPA managers[J]. *Business Horizons*, 2023, 66(1): 109-121.
17. Kim S H. Development of evaluation criteria for Robotic Process Automation (RPA) solution selection[J]. *Electronics*, 2023, 12(4): 986.
18. Vajgel B, Corrêa P L P, De Sousa T T, et al. Development of intelligent robotic process automation: A utility case study in Brazil[J]. *Ieee Access*, 2021, 9: 71222-71235.
19. Poschmann H, Brueggemann H, Goldmann D. Disassembly 4.0: A review on using robotics in disassembly tasks as a way of automation[J]. *Chemie Ingenieur Technik*, 2020, 92(4): 341-359.
20. Lin C H, Chiu D K W, Lam K T. Hong Kong academic librarians' attitudes toward robotic process automation[J]. *Library Hi Tech*, 2022.
21. Hallikainen P, Bekkhus R, Pan S L. How OpusCapita Used Internal RPA Capabilities to Offer Services to Clients[J]. *MIS Quarterly Executive*, 2018, 17(1).
22. Dumitru V F, Ionescu B Ş, Rîndaşu S M, et al. Implications for sustainability accounting and reporting in the context of the automation-driven evolution of ERP Systems[J]. *Electronics*, 2023, 12(8): 1819.
23. Hyun Y, Lee D, Chae U, et al. Improvement of business productivity by applying robotic process automation[J]. *Applied sciences*, 2021, 11(22): 10656.
24. Mohamed S A, Mahmoud M A, Mahdi M N, et al. Improving efficiency and effectiveness of robotic process automation in human resource management[J]. *Sustainability*, 2022, 14(7): 3920.
25. Campilho R D S G, Silva F J G. Industrial Process Improvement by Automation and Robotics[J]. *Machines*, 2023, 11(11): 1011.
26. Lacity M, Willcocks L, Gozman D. Influencing information systems practice: The action principles approach applied to robotic process and cognitive automation[J]. *Journal of Information Technology*, 2021, 36(3): 216-240.
27. Wang F Y. Parallel healthcare: robotic medical and health process automation for secured and smart social healthcare[J]. *IEEE Transactions on Computational Social Systems*, 2020, 7(3): 581-586.
28. Montero R, Victores J G, Martinez S, et al. Past, present and future of robotic tunnel inspection[J]. *Automation in Construction*, 2015, 59: 99-112.
29. Quille R V E, Almeida F V, Borycz J, et al. Performance Analysis Method for Robotic Process Automation[J]. *Sustainability*, 2023, 15(4): 3702.
30. Perdana A, Lee W E, Kim C M. Prototy\*\* and implementing Robotic Process Automation in accounting firms: Benefits, challenges and opportunities to audit automation[J]. *International Journal of Accounting Information Systems*, 2023, 51: 100641.
31. Gupta A, Prabhat P, Sawhney S, et al. Robotic process automation use cases in academia and early implementation experiences[J]. *IET Softw*, 2022, 17(4).
32. Hofmann P, Samp C, Urbach N. Robotic process automation[J]. *Electronic markets*, 2020, 30(1): 99-106.
33. Moraes C H V, Scolimoski J, Lambert-Torres G, et al. Robotic process automation and machine learning: a systematic review[J]. *Brazilian Archives of Biology and Technology*, 2022, 65: e22220096.
34. Plattfaut R, Borghoff V. Robotic process automation: a literature-based research agenda[J]. *Journal of Information Systems*, 2022, 36(2): 173-191.
35. Enriquez J G, Jiménez-Ramírez A, Domínguez-Mayo F J, et al. Robotic process automation: a scientific and industrial systematic map\*\* study[J]. *IEEE Access*, 2020, 8: 39113-39129.
36. Syed R, Suriadi S, Adams M, et al. Robotic process automation: contemporary themes and challenges[J]. *Computers in Industry*, 2020, 115: 103162.

37. Leno V, Polyvyanyy A, Dumas M, et al. Robotic process mining: vision and challenges[J]. *Business & Information Systems Engineering*, 2021, 63: 301-314.
38. Carden L, Maldonado T, Brace C, et al. Robotics process automation at TECHSERV: An implementation case study[J]. *Journal of Information Technology Teaching Cases*, 2019, 9(2): 72-79.
39. Siderska J. The adoption of robotic process automation technology to ensure business processes during the COVID-19 pandemic[J]. *Sustainability*, 2021, 13(14): 8020.
40. Sobczak A, Ziara L. The use of robotic process automation (RPA) as an element of smart city implementation: A case study of electricity billing document management at Bydgoszcz city Hall[J]. *Energies*, 2021, 14(16): 5191.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

