

Analysis of the application and market demand for RPA technology in the financial and economic industry

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ABSTRACT

In the context of digital economy, financial accounting is transforming to digitalization and intelligence. Financial institutions are facing increasingly fierce competition and increasingly complex business environments. In order to maintain a competitive edge and meet customer needs, financial institutions need to continuously improve operational efficiency, reduce costs, and ensure compliance. RPA technology, as an automation technology, provides a powerful tool for financial institutions to achieve these goals. Based on this, we study the concept of RPA technology, analyze its application value and application scenarios in the digital transformation of enterprise finance, and propose solutions to its problems, aiming to provide reference for the digital transformation of finance under RPA technology.

KEYWORDS

Fintech; RPA Financial Robotics; Digital Economy; Finance

1 Introduction

With the continuous expansion of the scale of financial business and the increasingly fierce competition in the market, financial institutions and enterprises are facing multiple pressures to improve efficiency, reduce costs and optimize services. Against this background, automation technology, as an effective means to improve business efficiency and reduce costs, is being more and more widely used in the financial and economic fields. Robotic Process Automation (RPA) technology, with its unique advantages, shows great market potential and commercial value in the financial and economic fields (Rui, 2023). RPA technology realizes automated processing of repetitive tasks by simulating the human's computer system operations. By simulating human operations in computer systems, RPA technology realizes the ability to automate repetitive and regular tasks, which brings many benefits to financial institutions and enterprises (Li, 2024). It can not only greatly improve the efficiency and accuracy of data processing, transaction processing, report generation and other tasks, and reduce labor costs, but also help financial institutions cope with increasingly stringent compliance regulatory requirements and enhance customer service quality and customer satisfaction. As a result, the application of RPA technology in the financial and economic sectors has become a key part of industry innovation and digital transformation.

However, despite its significant advantages, RPA technology also faces a number of challenges and problems in its practical application. Considerations such as the harmonization of technical standards, security and privacy protection all require in-depth study and solution by financial institutions and enterprises. Therefore, it is particularly important to conduct in-depth investigation and research on the market demand for the application of RPA technology in the financial and economic industry, to understand the market demand and trend, and to provide targeted technical solutions and services for financial institutions and enterprises. The purpose of this paper is to explore the market demand for the application of RPA technology in the financial and economic industry, and to analyze its impact on the operational efficiency, service quality, risk management, and compliance of financial institutions. Through the study of specific application cases of RPA technology in various fields, it aims to reveal the application potential and development trend of RPA technology in the financial and economic industry, and provide valuable references and inspirations for financial institutions and enterprises (Ma, 2022). At the same time, this paper also analyzes the problems and challenges faced by RPA technology in the process of application and puts forward corresponding solutions.

Meanwhile, this paper will also analyze the problems and challenges faced by RPA technology in the process of application, and put forward corresponding measures to promote the wide application and popularization of RPA technology in financial and economic fields.

2 Survey Program Design and Research

2.1 Purpose of the survey

To identify the potential application scenarios of RPA technology in business processes by surveying the managers, IT and financial department personnel of financial institutions. Evaluate the application and market size of RPA technology

in different fields through feedback from financial institutions. Understand the needs of financial institutions for RPA technology and existing solutions to guide product positioning and marketing. Ensure that RPA solutions meet the data security, compliance and regulatory requirements of the financial industry.

2.2 Survey Targets and Methods

The survey targets mainly include financial practitioners, financial business managers, IT technicians and financial business consultants. Survey methods mainly include online questionnaires, face-to-face interviews, telephone interviews, focus group discussions, case studies and field research.

2.3 Survey Design

Understand the respondents' understanding of RPA technology and its application. To understand the current status of the application of RPA technology in the financial and economic fields, satisfaction with the effect, and future plans. Clarify the respondents' specific needs and current challenges of RPA technology and the respondents' expectations and plans for the future development of RPA technology.

3 Data results and data analysis

Through the online questionnaire star and offline business organization visits, the questionnaire recovery rate is about 94%, and a total of 594 questionnaires were collected. After screening, 48 unqualified questionnaires were removed, leaving 546 valid questionnaires, which is about 92% of valid samples. The valid samples were sorted, coded and classified to provide basic data for subsequent analysis.

Table 1 Effective sample distribution

Knowledge of RPA		Gender within the group	
Very familiar	203	Male	179
		Female	24
Somewhat familiar	267	Male	143
		Female	124
Heard of it, but don't know it	76	Male	52
		Female	24

3.1 Analysis of survey respondents

Of the total respondents, 37% were familiar with RPA technology, 49% had some knowledge of RPA technology, and 14% had heard of RPA technology but did not know much about it. The percentage of female respondents was 32% and the percentage of male respondents was 68%.

3.2 RPA Technology Market Demand Analysis

3.2.1 Analysis of RPA Technology Application Scope

In this study, a questionnaire survey was conducted to investigate the views of professionals in different industries on the application of RPA technology. The results show that the bank employees are most concerned about the application of RPA in data processing, followed by customer service and risk management. The field of finance and accounting is also highly focused on this technology, while IT practitioners tend to use RPA for data processing. However, only a few of the clients of financial institutions consider RPA as their main demand. In addition, Fintech practitioners have a more negative attitude toward RPA, while other respondents generally have a lower level of adoption. Overall, RPA presents significant differentiated needs across industries, which may reflect different understandings of the suitability and value of automation tools across industries.

3.2.2 Analysis of the most important factors for the introduction of RPA technology

As can be seen from the table 3, the application of RPA technology mainly focuses on the field of data processing. Of those surveyed, 277 chose this option, accounting for 53 percent of the total. In addition, the technology in customer service, risk management and financial and accounting has a certain degree of application, respectively, 21%, 2% and 8%. IT practitioners are more knowledgeable about RPA. They are more cognizant about data processing, but less likely to

choose the other three. Financial institutions had the highest participation in data processing, at 22 percent. For Fintech professionals, data processing is one of the areas of greatest interest, but participation in other applications is low. Overall, RPA technology in the financial industry has a wide range of applicability and significant application value, especially in data processing has shown strong demand. However, different participants may prefer or focus on specific applications of RPA based on their own professional background and business needs.

Table 2 The main application areas of RPA technology.

Respondents		What are the main applications of RPA technology? (Multiple Choices)	
Bankers	389	Data Processing	345
		Customer Service	376
		Risk Management	234
		Finance & Accounting	328
IT Practitioners	32	Data Processing	31
		Customer Service	30
		Risk Management	19
		Finance & Accounting	31
Financial Institution Customers	69	Data Processing	43
		Customer Service	59
		Risk Management	29
		Finance & Accounting	64
Fintech Industry Professionals	29	Data Processing	2
		Customer Service	29
		Risk Management	27
		Finance & Accounting	29
Others	27	Data Processing	23
		Customer Service	26
		Risk Management	23
		Finance & Accounting	27

Table 3 The most significant factors influencing the introduction of RPA technology in the financial sector.

Respondents		What are the main applications of RPA technology? (Multiple Choices)	
Bankers	389	Data Processing	277
		Customer Service	21
		Risk Management	2
		Finance & Accounting	89
IT Practitioners	32	Data Processing	9
		Customer Service	1
		Risk Management	1
		Finance & Accounting	21
Financial Institution Customers	69	Data Processing	22
		Customer Service	10
		Risk Management	12
		Finance & Accounting	25
Fintech Industry Professionals	29	Data Processing	12
		Customer Service	0
		Risk Management	277
		Finance & Accounting	21
Others	27	Data Processing	2
		Customer Service	89
		Risk Management	9
		Finance & Accounting	1

3.3 RPA Technical Risk Analysis

According to the survey results, although RPA technology has a wide range of application prospects in the banking and finance sector, it also faces a series of potential risks. Among them, data security risk is generally recognized as the most prominent issue, accounting for 69% of the total, reflecting the extremely high concern for data security in the financial sector. In addition, 13% are concerned that the implementation of RPA may lead to unstable workflows and affect business operations; a similar 13% are worried about employee resistance to new technologies; while 5% are

concerned about the risk that the pace of technology evolution may be slower than expected. Therefore, when introducing RPA technology, banks and financial institutions need to pay due attention to and address these challenges to ensure the smooth application of the technology and the realization of the expected benefits.

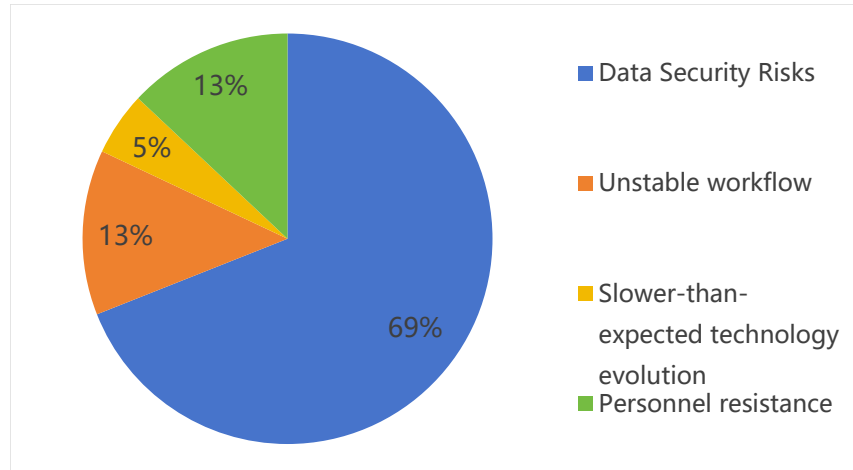


Figure 1 The biggest risks that RPA technology may face in the banking and finance sector.

4 The value of RPA application in finance digital transformation

RPA (Robotic ProcessAutomation) is an automation technology that performs repetitive tasks through software robots to reduce costs and improve efficiency (Ma, 2022). In the field of finance and taxation, RPA can automatically scan invoices, extract information and compare it with financial system data, record accounts or trigger alerts automatically. It also collects financial data on a regular basis, automatically generates financial statements, and performs basic financial analysis tasks such as calculating profitability and return on assets.

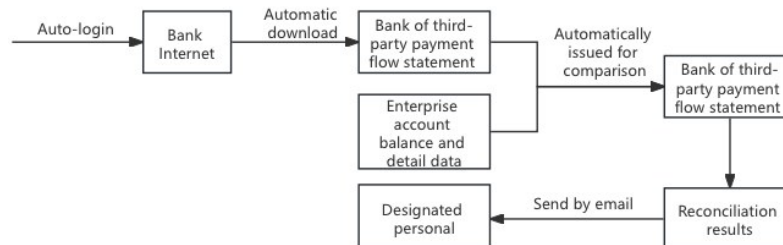


Figure 2 RPA Funds Management Process.

RPA automates the tax filing process, including collecting the required data, calculating the tax, filling out the filing forms, etc. The RPA system automatically generates the correct filing forms according to the tax law and submits them to the tax authorities before the deadline. In addition, RPA monitors changing tax laws and regulations to ensure that your organization remains compliant.

RPA automates the tax refund process, including collecting documents, approving and generating refund claims, speeding up the process and reducing errors. It also monitors financial transactions, identifies potential risks and violations, triggers alerts and generates compliance reports. For customer tax inquiries, RPA can automatically respond to frequently asked questions or transfer to human customer service. In addition, RPA collects and analyzes financial data to support financial forecasting and planning.

5 Problems of RPA technology in financial digital transformation

Since the RPA system relies on data from the existing systems of the enterprise, if the original data is incorrect, missing or not standardized, it will directly affect the processing results and efficiency of RPA. Differences in data formats, coding and naming rules between different systems may cause RPA to face difficulties in data conversion and matching, increasing the error rate and processing time (Sun, 2024).

Since enterprise financial systems may involve software from multiple different vendors and versions, the interfaces and protocols between these systems may be inconsistent, resulting in RPA facing challenges in integration. The financial

processes and rules of different enterprises may differ significantly, requiring RPA systems to provide highly customized solutions, which increases the complexity of implementation and maintenance. When RPA processes financial data, if the security measures are not in place, it may lead to the leakage of sensitive information, bringing losses to the enterprise. As RPA technology becomes more widely used, the system itself may become a target for hacker attacks, which, if suffered, will affect the normal operation of the enterprise. The implementation of RPA requires the training and guidance of enterprise employees to ensure that they are proficient in the use and maintenance of the system, which increases the enterprise's training costs. Some employees may not be receptive to new technologies, which may cause them to encounter difficulties in using the RPA system and affect their work efficiency.

6 Main Conclusions and Policy Implications

RPA technology is the key to unlocking intelligent productivity in enterprises, empowering employees with higher value, eliminating the phenomenon of part-time human systems, and responding to the development trend of the era of large-scale human-machine collaboration. It empowers data with deep insights, connects information silos, breaks down system barriers, quantifies process management, and visualizes business data. Through this technology, enterprises are able to explore business opportunities and truly provide strong support for assisted decision-making. In the process of financial digital transformation, enterprises using RPA technology can not only improve efficiency and reduce labor costs, but also improve the level of financial analysis, output more valuable recommendations, improve business management and prevent risks. Therefore, enterprises should focus on the application of RPA technology in the digital transformation of finance, build a professional talent team, improve the organizational structure of financial work, standardize the financial processing process, use advanced RPA technology, will involve the intelligent management of financial aspects, the degree of digital control will be upgraded to a completely new level. However, at present, the construction of RPA corporate finance sharing center still has many places that need to be improved and perfected, and has yet to be further improved through practical and theoretical verification. In the future, this field may incorporate artificial intelligence, machine learning and natural language processing technology, with a view to incorporating forms that are not formatted into the scope of processing, but also involves the undertaking of processing automated tasks, etc., and will certainly shine in more industry leaders.

Through the research and analysis of the market demand for the application of RPA technology in the financial and economic industry, we can draw the following conclusions: firstly, the market for RPA in the financial sector is large and growing rapidly, mainly driven by the need for cost cutting, efficiency improvement and compliance by financial institutions. Second, the main application scenarios of RPA technology in the financial industry include account management, payment processing, and compliance checking, etc., and each scenario has a huge potential market demand. In addition, there are several competitive RPA vendors in the market, who compete for market share through different product features and pricing strategies. Finally, with the digital transformation of the financial industry and the continuous advancement of technological innovation, the future outlook of RPA technology in the financial sector is very broad, especially with the integration and development of other technologies, such as artificial intelligence, which will bring more opportunities and challenges for financial institutions. Therefore, an in-depth understanding of market demand and trends is crucial for financial institutions and related enterprises to make strategic decisions and future development plans.

About the Author

Wei Liu, born on December 5, 2000, male, Han ethnicity, from Fengtai County, Huainan City, Anhui Province, is a graduate student at the School of Finance, Anhui University of Finance and Economics. His research interests focus on green finance and carbon emissions.

References

- [1] Rui Z, Ya L, Yaxuan C. The Application of RPA Technology in the Financial and Taxation Domains of SMEs in the Digital Era[J]. *Academic Journal of Business & Management*, 2023, 5(24).
- [2] Liu Y, Xu J, Chen X, et al. Digital CRISPR/Cas13a-RPA based assay for rapid and sensitive detection of JC virus in renal transplant patients[J]. *Microchemical Journal*, 2024, 196: 109655.
- [3] Ma J, Jia H. Application of financial robots based on RPA technology in small and medium-sized enterprises[C]//2022 International Conference on Knowledge Engineering and Communication Systems (ICKES). IEEE, 2022: 1-7.
- [4] Sun Y. Challenges Faced by Enterprises in Digital Transformation-Based on RPA Technology[C]//2024 8th International Seminar on Education, Management and Social Sciences (ISEMSS 2024). Atlantis Press, 2024: 893-907.
- [5] Han M. Frontier Research and Implications of RPA Technology in Chinese Financial Management[J]. *Academic Journal of Business & Management*, 2023, 5(15): 48-52.