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TRANSFORMING FINANCIAL MANAGEMENT IN CHINA THROUGH RPA TECHNOLOGY

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Abstract: The evolution of financial management in modern enterprises, driven by rapid technological advancement, has led to the emergence of intelligent financial accounting. From traditional accounting methods to computerized accounting, and now the application of financial robots using Robotic Process Automation (RPA) technology, these transformations have paved the way for intelligent financial accounting. This innovative approach leverages advanced technologies to enhance the efficiency and accuracy of financial management, serving as a reliable foundation for corporate decision-making.

Financial robots, operating with human-like precision, excel at handling repetitive, mechanical tasks that are prone to human error. They can generate financial reports and conduct analyses on demand, contributing significantly to reducing the workload of financial staff and operational costs. By freeing finance professionals from repetitive tasks, intelligent financial accounting empowers companies to better navigate market competition and management challenges, fostering sustainable development.

The adoption of RPA technology in financial management, particularly in the field of financial accounting, has demonstrated the substantial benefits of financial robotics. This has prompted international accounting firms and major corporations to incorporate RPA technology into their financial operations. China, in particular, has witnessed rapid development in financial robotics, with domestic companies launching unique and focused financial robot models.

Keywords: Intelligent financial accounting, financial management, financial robots, Robotic Process Automation (RPA), sustainable development.

Introduction

The growth and development of enterprises is an important driving force for economic and social progress. In the development process of modern enterprises, financial management plays a vital role. With the rapid development of information technology, the mode of financial management is constantly updated. From traditional accounting to computerized accounting and then to the application of financial robots in financial management based on RPA technology, this series of changes has given birth to intelligent financial accounting. Intelligent financial

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accounting makes use of advanced technical means and tools to improve the efficiency and accuracy of financial management and provide a more reliable basis for corporate decision-making. Financial robots can imitate human operations to handle tasks that are too simplistic, mechanical and repetitive for humans, reduce the occurrence of human errors and can automatically generate financial reports and analysis results according to demand. The introduction of intelligent financial accounting enables companies to better cope with market competition and management challenges, and drives them to achieve sustainable development. The application of RPA technology in the field of financial management has proven that financial robotics can greatly reduce the workload of staff, improve efficiency, save the cost of corporate financial operations, free financial staff from heavy and repetitive work, and thus promote the intelligent development of corporate finance [1].

RPA technology first received widespread attention around the world when it was publicly used by international accounting firms in 2017. Since then, RPA technology has gradually started to be used by major companies around the world due to its advancement and intelligence and has continuously researched new models on how it can be integrated with corporate financial accounting. In the process of development, major Chinese companies have launched financial robots with unique features and different focuses, robotic process automation is rapidly developing in China. On the other hand RPA robotic process automation plays an important role in financial accounting features and business processes.

1. Theoretical analysis of RPA

2.1 The connotation of RPA technology

RPA technology is an intelligent technology that can perform complex tasks through an operator interface, which is simply called robotic process automation, it is an emerging "artificial intelligence workforce" in the field of financial accounting. It is based on the Windows system and browser interaction, simulating anthropomorphic operations such as mouse, Kenpan, screen crawl, and running process. at the same time, it can simulate the operation tasks such as opening programs, creating forms, copying and pasting, selecting forms and databases, opening web pages, and collecting network data according to human operations. Through this simulated operation system, based on the original operating system RPA technology can deal with a large number of repetitive operation tasks such as complex and repetitive business processes for human beings, clear rules, cumbersome business processes and large scale, which can effectively free the finance staff, improve the efficiency and quality of service, and also avoid the detailed errors that occur manually [2].

2.2 Characteristics of RPA technology

Since RPA itself is a technology combined with artificial intelligence, it can solve tasks that require a lot of repetition in the work process by imitating human operations [3], with the following technical features:

Continuity of operation: RPA has the ability to work around the clock, greatly improving the efficiency of corporate financial management;

Clear rules: Before using RPA, staff need to script clear rules to ensure that RPA is fully operational;

Plug-in form: RPA exists as a plug-in to other systems and does not make changes to the architecture of the enterprise;

Imitation capability: the RPA is capable of operating in accordance with manual operation and has a high degree of imitation capability.

Original Article

2.3 Characteristics of RPA technology

Traditional business process procedures usually rely on manual implementation, but with the advent of RPA technology, the traditional approach has taken a hit. Through digital thinking, RPA technology better optimizes business processes and has the following key features:

Processing by machine: RPA technology uses a scripting language to pre-write and build the user interface by a technician, after which it runs automatically according to a program set up in advance by the technician. It can keep running the job according to the written program until the task is completed.

Simulation of human interaction: RPA technology mainly simulates the manual operations such as keyboard input, copying and cutting when the operator interacts with the computer. By recording and storing human operations on the computer and imitating them, repetitive and tedious mechanical tasks are accomplished.

Operating under explicit rules: Because the current RPA technology and artificial intelligence technology are in the initial stage of integration, they can't operate completely independently like humans, and can only operate according to the instructions set by the staff in advance. Therefore, it must have clear guiding rules and operating rules, and be implemented in a procedural way.

Non-intrusive systems: The RPA robot is used without the burden of additional interfaces on the original system, and it runs as an external program. For those financial tasks that require rotating operations between two systems inside and outside the enterprise, it can imitate humans to operate separately between different systems according to a set program, with a certain degree of intelligence and independence.

In summary, RPA technology is well suited for current financial work. It can handle those tedious and repetitive task processes in work by pre-set programs that imitate the relevant human operations in computers. At the same time, it can intelligently switch operations between different systems and has a very wide applicability.

3. RPA financial robot concept and application

3.1 Financial robot concept

The application of financial robots in the Chinese finance market is the latest manifestation of RPA technology in the finance sector. Specifically, it is an automated program to mimic human operations in the finance field, it simulates the workflow of accounting staff in the real workplace for automated operations. It can replace the staff to complete the tedious, heavy workload, high repetitiveness and constant rules of basic financial work. It can be used as a virtual accountant in the finance department, replacing the staff in those workflows where the operations are repetitive and just need to be placed in a certain part of the overall operational process to work autonomously [4,5].

3.2 Functions of financial robots

Retrieving and recording data: It can simulate the regular operational processes of finance personnel, document procedures and automatically retrieve and record data when similar operations occur;

Image recognition and processing: The financial robot automatically scans and identifies documents such as vouchers through optical character recognition technology and is able to intelligently identify and process the relevant images, data, etc. collected;

Upload and download information: The financial robot can log in to the major information system websites independently and intelligently imitating human beings according to the procedures formulated by the employees

in advance. Information related to corporate financial management is uploaded and downloaded by RPA autonomously;

Data processing and analysis: The ability of the financial robot to automatically process, filter and calculate the data searched and downloaded according to the process;

Information monitoring and output: Finance robots can execute commands by running human pre-set operation programs to simulate staff members assigning work to other finance staff, issuing financial reports, notifying staff of work information, etc.;

Financial robots utilize the unique features of RPA technology to handle a large number of repetitive and rule-defined operational processes based on human settings and imitation. Its technical features include: i)it can enabling simple repetitive operations such as data retrieval, downloading, entry and review; ii)it can handling a large number of and error-prone operations such as reviewing reimbursement bills, validating VAT invoices and reconciling with correspondents or banks; iii) it not changing multiple heterogeneous systems embedded in the system; iv) it working in a 24/7 mode to compensate for the limited time and energy of finance staff working problem and is suitable for the business operation of enterprises around the clock [6].

3.3 Financial robots in the Chinese market

The development of RPA can be divided into four stages: Assistive RPA stage, Non-Assistive RPA stage, Autonomous RPA stage and Cognitive RPA stage. Most financial robots in China are still in the non-assistive RPA stage. In the future, with the continuous improvement of artificial intelligence technology, financial robots will enter the cognitive RPA stage.

Its main function is to improve employee productivity. It is deployed on employees' PC desktops, but the degree of automation is limited, not fully automated and not available on a large scale. It has partial sensing and computing capabilities, typically represented by the "Big Four" financial robots.

Non-adjuvant RPA: It is deployed on VMs (Virtual Memory Systems) and its work is aimed at partial automation and virtual employee hierarchy. At this stage, the robot needs to be controlled by humans, specifically the operation process requires changes in the user's management interface and system. The robot has more sensing and computing capabilities and some cognitive abilities. A typical representative of financial robot being used is the Kingdee EAS financial robot.

Autonomous RPA: It works with the goal of achieving end-to-end automation and the development of a functionally diverse virtual workforce at a certain scale. In this phase, robots are deployed on cloud servers and software service platforms provided through the web.

Cognitive RPA: The 4.0 stage of RPA development is a stage of future outlook that covers all the functions of the next generation of RPA. In the autonomous RPA stage, dealing with unstructured is a challenge. Cognitive RPA uses artificial intelligence and natural language processing to analyze unstructured data, perform prediction and analysis, judgment, and other functions for automatic processing tasks.

3.4 Analysis of the practical application of financial robots

At the current stage, financial robots are widely used in finance, especially in scenarios that involve repetitive, time-consuming and heavy workloads in operational processes. However, RPA technology is not just a tool but a transformative technology that injects tremendous energy and momentum into the growth of the business. It can replace manual labor and enable employees to focus on tasks with higher added value, thus breathing new life

into the optimization of the entire process of financial accounting. In addition, RPA is compatible with a variety of application and system platforms, performing a large number of tasks with the same precision and repeatability, including collecting and parsing data, processing transactions, manipulating information, activating applications, and communicating with other computing systems. This makes RPA a very powerful and reliable tool.

The application of RPA financial robots in enterprises reduces the rate of manual errors in low-value, repetitive and tedious tasks in finance and taxation. It can greatly improve the efficiency of employees. The use of financial robots promotes the intelligent development and transformation process of enterprise financial management departments, greatly saving the energy and time costs that finance staff need to invest, allowing finance staff to devote more energy to other tasks to improve the quality and efficiency of their work. Therefore, the introduction of RPA financial robots has a positive impact on the effectiveness, accuracy and reliability of the internal control of enterprises. On this basis, the application of financial robots in companies has been effective in the following ways:

The first point is to improve business processing efficiency, reduce costs and improve accuracy. The first is the improvement of efficiency.

Robots have the ability to work continuously, regardless of time constraints, so they can typically take on tasks equivalent to the workload of two to five people, robots can reduce business processing time by more than 90% compared to manual labor. Then comes the cost savings. According to statistics, RPAs can save up to 90% of costs and can be fully covered by only 30% of the cost in terms of usage, maintenance and repair. After the application of financial robots, large group companies such as Power Grid and Hubei Post have achieved cost reduction and efficiency gains, increasing business processing efficiency by more than 90% and releasing at least 2 full-time positions.

The second point is to pass through heterogeneous systems and solve the difficulties of data interaction. For front-line operators, a single task will involve different business systems. For example, some work tasks need to collect information from different data sources and different business systems, it is very easy to make mistakes if these information processing is left to staff members. After the financial robot connects to multiple systems by mimicking the actions of a single person, it automatically performs operations such as data acquisition, identification, downloading, downloading and notification, which greatly reduces the human error rate. The financial robot effectively solves the difficult situation of opening data interfaces between heterogeneous systems without modifying multiple heterogeneous systems that require data interaction [3].

The third point is to enhance the regulatory of the process [7]. Manual execution is difficult to accurately record the execution of tasks and thus cannot be verified when problems arise. When the RPA finance robot performs a task, it can accurately record the process and results of the execution, and all the execution steps are traceable.

With traceability at every step of automated processing, the robotic system provides companies with the ability to accurately detect system errors and make problem resolution easier, resulting in a significant improvement in the quality of financial work.

The fourth point is that finance professionals have more transformational opportunities. The use of financial robots has enabled many financial accounting practitioners, who were working on basic transactions, to shift their roles and start working on high value-added accounting tasks. Such as strategic finance and corporate finance. This shift can effectively motivate finance practitioners and enable them to play a greater role [8].

The fifth point is to save on work costs. Financial robots typically support 35 to 50 percent of automated processes compared to manual financial management. By automating repetitive tasks with finance robots, companies can reallocate human resources to more valuable tasks, such as financial strategy development, financial planning, and strategic analysis. This can increase employee job satisfaction and productivity, resulting in job cost savings [9].

4. Conclusion

The advantages of financial robots are more obvious than traditional personnel, it can work 24 hours a day constantly, there will be no human should be bored, irritable and other negative emotions, high efficiency, the overall operation process is based on the human set up the program to run, basically no error, can greatly improve the efficiency of the financial aspects. At the same time, after RPA is applied to enterprises, a large amount of manual labor is freed up to do high value-added financial work, which can further reduce enterprise costs and improve the efficiency of enterprises at the same time. While financial robots have advantages that cannot be replaced by humans, they also have disadvantages in some areas. For example, on the one hand, because financial robots operate according to fixed process rules, they are only applicable to jobs where the business is basically unchanged. If the business scenario changes significantly, the financial robot will not be able to recognize and therefore not be able to operate. That means they can't handle exceptions. On the other hand, because financial robots are computer programs, there are certain requirements for the stability of the enterprise's system platform in order to ensure its proper operation. This requires companies to guarantee the operation of financial robots. At the same time, the company should always track the operation of the financial robot and make appropriate changes to the fixed operation process to make it more efficient.

In general, financial robots based on RPA technology are developing fast in foreign countries, but in the Chinese market, they are in the initial stage of financial intelligence development, so they need to be researched and practiced by academics and practitioners in order to have further development. We believe that in the future RPA technology and artificial intelligence technology will further integrate and gradually develop towards intelligent process automation. Financial accountants are more skilled in the use of financial robotics. It will improve the efficiency of financial accounting, maximize the role of financial personnel, high quality and high quantity of enterprise financial work, and ultimately provide better financial services for the daily business management activities of enterprises.

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Original Article

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