

Research On Financial Digital Transformationpath of Logistics Industry Empowered By RPA

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Abstract. With the rapid development of information technology, the application of RPA technology in finance has laid the foundation for the financial digital transformation of logistics industry to adapt to the market demand. At present, the logistics industry generally realizes digitalization, strengthening the application and innovation of various digital technologies in the core business process, and promoting the transformation of digitalization, intelligence and automation is an inevitable trend of the logistics industry. This paper aims to study how RPA empowers the financial digital transformation of logistics industry and how to bring benefits to the logistics industry. Firstly, according to the application of RPA, the current situation of logistics industry is analyzed; Secondly, through the case analysis two domestic and foreign logistics enterprises, this paper discusses how to realize the financial digital transformation in logistics industry. Finally, two financial indicators are used to analyze how RPA can reduce cost and increase efficiency for the logistics industry. In addition, it summarizes the risks and impacts of financial digital transformation in logistics industry.

Keywords: RPA; financial digital transformation; cost reduction and efficiency increase.

1. Introduction

In October 2017, the 19th National Congress of the Communist Party of China, a political vanguard team in China, was held in Beijing. The report of the 19th National Congress proposed to actively promote the integration of smart technology and the real economy. At the same time, the application of RPA technology has become the trend of The Times. In May 2019, Zinnov, a global management and strategy consulting company, released the first global RPA application status and development report. which shows that the global market share of RPA will exceed \$100 billion, and RPA robots that work with humans account for about 30% of the market share and are growing at a steady rate [1].

In May 2020, the "Digital Transformation Partnership Action" initiative was officially announced on the official website of China's National Development and Reform Commission, the main focus is to drive the majority of micro, small and medium sized enterprises to actively carry out digital transformation work, and quickly build the core competitiveness of digital enterprises. so as to enhance the power and resilience of enterprise development, build complete chain of digital industrial structure and build a digital ecosystem, to create a new digital ecological community with the core concept of "digital-leading, epidemic fighting, shared innovation, and win-win", so as to jointly promote the development of China's national economy to a higher level [2]. In January 2022, The State Council issued the "14th Five-Year Plan for Digital Economy Development", which proposed the development goal of China's digital economy entering a period of comprehensive expansion by 2025 and made it clear that artificial intelligence is the core engine of digital economy development [3].

As an important industry that runs through the three major industries, the logistics industry plays an important role in the process of achieving high-quality economic development in China [4]. The Circular of The General Office of the State Council on forwarding the Special Action Plan of the National Development and Reform Commission for the Logistics Industry to reduce costs and increase efficiency (2016-2018) encourages the logistics industry to improve the level of business refinement. Therefore, with the help of stable and consistent robots to replace human work, the

management of logistics enterprises is more standardized, refined and personalized in performance evaluation, management operations, business processes and other aspects. At the same time, the application of RPA in the financial field of logistics enterprises has promoted the financial digital transformation of the logistics industry to a certain extent.

In the current era of rapid development of Internet, big data, cloud computing and artificial intelligence, as long as the use rules are designed in advance, RPA can simulate manual, copy, paste, click, input and other behaviors, and help humans to complete a large number of work tasks with "relatively fixed rules, high repeatability and low added value". This not only has an impact on the entity enterprise, but also has a huge impact on the accounting theory itself. Therefore, this paper analyzes how RPA enables the digital financial transformation of logistics industry and the impact brought by the digital financial transformation of logistics industry, Enterprises can better carry out fine management to adapt to the impact of RPA environment.

This paper adopts the method of combining case study and index analysis, Case study has always been one of the important methods of social science research, this paper analyzes the case of SF Express and DHL Global Freight, two domestic and foreign logistics enterprises, and analyzes how RPA can reduce cost and increase efficiency of logistics enterprises through two indicators of operating cost rate and work efficiency.

2. The Application of RPA in the Logistics Industry Status Analysis

2.1. Overview of RPA Technology

Robotic Process Automation (RPA), or automated process robotics, is a kind of software robot, a technology that simulates human operations and automates regular repetitive and numerous business projects. RPA automates the exchange and processing of data between OFFICE applications. Web applications, enterprise applications, and other systems to improve efficiency, reduce enterprise management costs, and effectively manage risk, Many RPA platforms provide a friendly interactive interface, users only need to master the business process and professional knowledge, even if there is No programming experience, it is easy to master, do Lowcode (low code) or even No code (no code); Simulated manual operation means that the robot can perform the basic daily operations of the user, and be on standby all day long, and can perform the work previously performed by manual 7x24 hours, with a low error rate. At present, RPA is mostly in the auxiliary stage. With the progress and development of technology, RPA will gradually become intelligent, and "RPA+AI" is the future development trend [5].

2.2. Application of RPA in the Field of Logistics and Transportation

The national 14th Five Year Plan attaches great importance to the innovation and development of China's logistics and supply chain and puts forward clear requirements for building a modern logistics system. In the future, IT technology will be used to upgrade and transform traditional logistics infrastructure, and vigorously promote the construction of information platform system [6]. With the inclination of national policies and the continuous development of RPA+AI technology, China's artificial intelligence industry will enter a stage of explosive growth. According to the data of, the Research market size of China's RPA industry will reach nearly 2 billion yuan in 2020, with a year-on-year growth rate of 96% and a growth rate exceeding the global average [7]. Then in 2021, AI+RPA will continue to penetrate in all walks of life, and digital employees will gradually become the standard equipment of enterprises and be applied to various work scenarios such as international logistics, finance and personnel to help enterprises improve quality and efficiency. Such as DHL, Nowadays, both domestic and foreign enterprises, International Express, SF Express, NYK Logistics, etc., have applied RPA automated robots to various business processes in the logistics management process.

Statistics from the State Post Bureau show that China's express delivery industry created 50.71 billion pieces of business in 2018, with a growth rate of 26.6%, which is more than the total amount

of countries and regions such as the United States, Japan and Europe. Globally, its scale is no country or region comparable, and the number of express packages accounts for more than 50% in the global market. The key reason why the logistics industry can achieve such achievements and successfully transform, and upgrade is the realization of digital development [8]. Smart logistics and AI technology have entered the era of big data, and logistics professionals continue to adapt to the needs of The Times, master the terminal of modern logistics technology, and promote the transformation and upgrading of traditional logistics to modern logistics. With the rapid development of China's economy and the continuous improvement of science and technology, there have been advanced scientific and technological equipment such as intelligent three dimensional warehouse, intelligent manipulator, intelligent storage, and many logistics enterprises in the logistics industry at this stage are introducing RPA automated robot technology, which has prompted the number of logistics employees in China to decrease continuously from the original, Once intelligent logistics and AI technology enter a mature stage, modern science and technology will replace manual labor on a large scale, and the number of logistics employees will be greatly reduced [9].

RPA system can be used to track goods and manage transportation. RPA system can automate cargo tracking tasks, such as checking the location of goods, updating the status of goods and generating cargo tracking reports. Logistics companies can use RPA system to automate order processing and customer service, such as processing orders, updating order status and sending order confirmation emails, etc. Logistics companies can use the RPA system to automate inventory management and procurement management, such as recording inventory quantities, updating inventory data, generating inventory reports, automating purchase order processing, automating supplier management and automating procurement cost analysis, etc.

The application of RPA systems in the logistics industry is very wide, from cargo tracking and transportation management to financial management and report generation, RPA systems can be used to improve efficiency and accuracy, RPA systems can reduce labor costs, improve efficiency and satisfaction, thereby increasing the competitiveness and Customer profitability of logistics companies.

3. How can the Logistics Industry Achieve Financialdigital Transformation

3.1. Case Analysis of SF Financial Digital Transformation

3.1.1 Sf supply chain realizes multi-site automation with the help of RPA

While improving warehouse management with the help of RPA, SF Supply Chain has explored a path of digital transformation suitable for itself SF Supply Chain has storage and logistics facilities and operations in more than 80 cities, with more than 260 stations, owning and managing a warehouse area of more than 1.1 million square meters, 13 regional distribution centers and more than 70 secondary transfer centers, and more than 30 trunk transportation networks, covering more than 300 cities.

In 2018, SF Supply Chain began to introduce RPA technology, which is mainly applied to the data operation of warehouses. Taking the delivery process application of a site in SF supply chain as an example, after the adoption of RPA technology, the system delivery data operation that originally required two full-time employees was handed over to RPA robots. Under the condition that the average monthly orders exceeded 10,000, RPA robots took over the time consuming and repetitive work, which greatly improved the delivery efficiency and employee satisfaction. The realization of process automation in SF supply chain is mainly applied to the following five scenarios: automated order processing, automated tracking, warehouse entry ancexit. Automated time transportation management and automated settlement reconciliation.

3.1.2 With the idea of innovation funnel", refine the 50+ multiplexed warehousing scenario

In order to verify the applicability, scalability and commercial value of digital innovation technology in different supply chain scenarios, SF supply chain continues DHL's original "innovation

funnel methodology: mining ideas -- Proof of Concept (PoC) - Pilot - productization - commercialization.

3.2. Case Analysis of DHL International Express Financialdigital Transformation

3.2.1 Create a global process automation center using RPA technology

DGFF is the leading provider of air, sea and land freight forwarding services within the Deutsche Post DHL Group. DGFF has a global Service Center division with five centers and more than 4,500 employees. To ensure that the best services continue to be delivered efficiently, DGFF selected UiPath as its technology partner to create the Global Process Automation Center. The goal is to streamline important internal processes using innovative technologies such as RPA (Robotic Process Automation technology). This ensures that the shared services model operates at a high performance to achieve the company's ongoing business objectives.

3.2.2 Post Flight's process automation pilot exceeded expectations

The uiPath robot pulls data from the department's operating system and combines it with key flight data, such as whether a partner's flight is on time. The Post Flight bot then generates a report that is used exclusively by operations teams to manage special situations.

Previously, the DGFF had a team of 30 employees to go through the same process. With the UiPath enterprise-class RPA platform, 15 of those employees moved on to higher value and more rewarding work. This has resulted in significant internal efficiency gains. The rest of the staff now manage the process on a case-by case basis, improving the quality of customer service and thus increasing the transparency of possible delays in the supply chain.

3.2.3 Increase RPA value through the Joy Center

DGFF first created a Center of Excellence (COE) to define the DcFF standard for process automation based on RPA technology, and a virtual Delivery center (VDC)to provide the corresponding configuration and operation services.

4. How can RPA Applications Reduce Costs and Increaseefficiency for the Logistics Industry

4.1. Analysis of Operating Cost Rate Index -- Takingsfexpress As an Example

Operating cost rate = operating profit/operating cost X100%

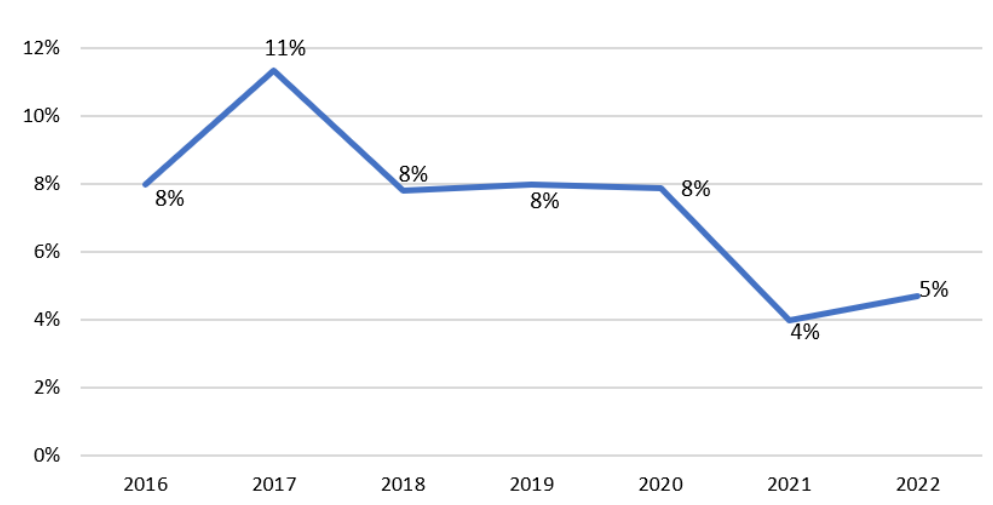


Figure 1. Operating cost rate

Data source: East Money.net

In 2018, SF Express supply chain began to introduce RPA technology, mainly applied to the data operation of warehouses. According to the indicator formula $\text{operating cost rate} = \text{operating profit} / \text{operating cost} * 100\%$, the operating cost rate data of SF Express from 2016 to 2018 can be seen from Figure 1, After the introduction of RAP logistics technology, SF Express's operating cost rate gradually declines every year, dropping to 4% in 2021 and rising to 5% in 2022. After 2018, the main reason for the decline of operating cost rate is the great reduction of labor cost.

4.2. Analysis of Work Efficiency Index

In terms of the cooperation between Chinese logistics enterprises and Yunna Demon RPA system, as shown in Figure 2, we list two workflow examples to analyze the work efficiency before and after the application of RPA in the logistics operation center.

Automated order entry, before the use of RPA, requires 1 worker to work 6 hours per day, annual working hours of 1584 hours, a worker to invest 198 working days per year. But after using RPA, the robot can work 24 hours without interruption, which greatly saves manpower and improves work efficiency.

Automatic transportation management of oil card recharge, the workload is extremely huge, 4 people per month 24+30 hours shift processing 50000 approval orders, time-consuming and laborious labor cost is high; After the use of RPA robot, 24-hour uninterrupted monitoring is realized, and 2 single approval order is 2-3 times faster than that of manual labor, which greatly liberates manpower [10].

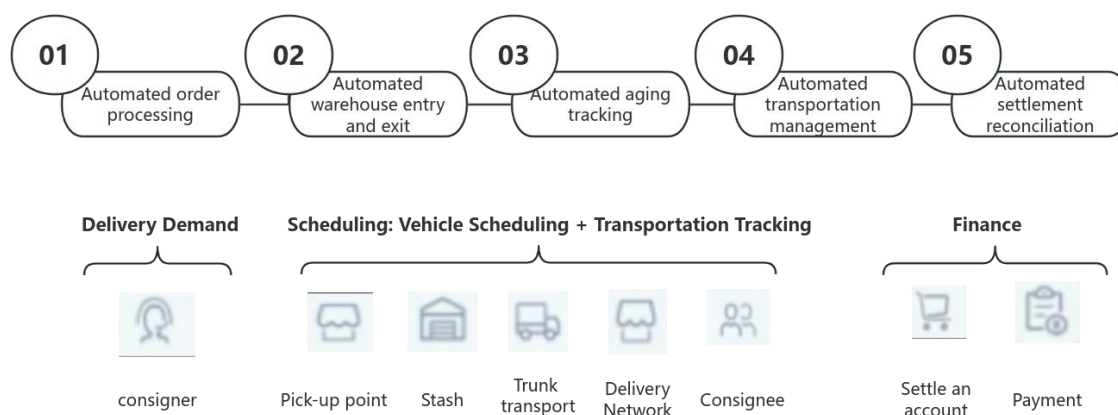


Figure 2. Flow chart of logistics industry

Data source: Logistics and Supply Chain Finance Branch of China Internet of Things.@logistics people, say goodbye to the dilemma of "small scattered weak" industry.2023-3-24, 2023-3-24. digital cost reduction and efficiency can be achieved!

5. Conclusion

Through the financial digital transformation case study of SF Express and DHL global freight and the analysis of operating cost rate and work efficiency indicators, the following conclusions are drawn:

5.1. Promote the Optimization of Transportation Links in the Logistics Industry and Improve Logistics Work Efficiency

Logistics transportation is an important source and channel of income for logistics enterprises, The application of artificial intelligence algorithm to optimize and reconstruct the specific logistics and transportation links can create conditions for increasing the income of enterprises. Through RPA artificial intelligence technology, it can reasonably predict the supply and demand situation of

logistics enterprises in a certain period of time, thus promoting enterprises to equip with reasonable materials and transportation tools. RPA is applied to logistics transportation links, simplifying the repetitive work in the transportation process and reducing unnecessary manpower. Through data analysis technology, it helps enterprises to formulate the most appropriate transportation route. Avoid the waste of transportation resources, and realize the best allocation of manpower, vehicles, time and other resources.

5.2. Promote the Cost Management of Logistics Operations to Open the Way for future Revenue Growth

RPA artificial intelligence technology is applied to expand the business coverage and product supply area of logistics enterprises. Conducting accurate data classification and prediction of market information and thereby optimizing the warehouse layout of demand preferences, logistics enterprises, reducing warehouse and management costs, developing reasonable transportation workload for different logistics business tasks, thus achieving efficient cost control of logistics enterprises.

5.3. Contribute to the Construction of an Integrated Supply Chain and Logistics Platform, and Improve the Operational Efficiency of Logistics Enterprises

The integrated supply chain and logistics platform includes demand management, scheduling management, inventory management, transportation management, planning coordination, procurement management, warehousing management, cooperative unit management, etc., to realize the centralized and unified relevant information, RPA artificial intelligence technology is used to build an integrated supply chain and logistics platform, promote the intelligent, efficient and scientific operation of the logistics industry, expand the number of customers by providing quality services to customers, promote logistics enterprises to make the most appropriate business decisions, and then increase revenue.

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