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Research on Digital Transformation of New Retail Enterprises Based on AI+RPA

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Abstract: Faced with the breakthrough of digital technology and upgrading of consumer structure, the traditional retail industry has achieved the basic transformation and efficiency of a full value chain relying on digital technology. Among them, AI+RPA has become a new direction in developing the new retail industry with artificial intelligence empowerment machine automation. This article takes the new retail industry as the target market and the application of AI+RPA technology as the research content, using the theoretical and multiple case analysis methods to study. Choose three companies: Freshippo, Yonghui superstores, and Suning.com, for external horizontal contrast and internal vertical contrast. Relying on the theory of value chain, the division is divided into four aspects: the supply side, the demand side, financial management, and logistics. To a certain extent, this article has made up for the research gap of the omni -channel ecological construction of the new retail industry and the application of the AI+RPA technology industry, expecting to broaden the future development channels and directions of the new retail industry.

Keywords: administrational, efficiency, digitalization, AI+RPA, new retail enterprise

1. Introduction

With the continuous integration of digital technology into products, services, and processes, the digital transformation of new retail enterprises based on digital transformation and digital upgrading has become the main mode of retail industry development. Digital transformation is conducive to improving the process efficiency of new retail enterprises and can better play the efficiency of resource management to promote the breakthrough and progressive dual innovation development of new retail enterprises. China's retail industry is in a weak development period with the disappearance of the Internet demographic dividend and the shrinking proportion of traditional offline retail channels. It needs a "booster". Integrating AI technology and RPA technology with the retail industry may be one of the prescriptions for developing retail enterprises. The innovative value of AI+RPA technology to the retail industry is not only reflected in the reconstruction of consumer relations and stimulating consumer demand but also accelerates the optimization of the ring structure of the retail "man-goods - field". It has also changed how retail and consumer data are collected, analyzed, and applied value.

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At present, the "AI+ retail" industry as a whole is still in the exploratory stage. With the improvement of the digital infrastructure level of retail enterprises and the emergence of typical use cases, AI technology and RPA technology will bring greater imagination space for the intelligent reform of retail enterprises and boost the overall value growth of the industry.

Existing literature studies have confirmed the necessity and importance of AI+RPA technology in the digital transformation of new retail enterprises. This paper analyzes and compares the application scenarios and development achievements of leading enterprises in the industry from the perspective of the whole supply chain, takes three leading enterprises in China's new retail industry as the entry point, studies their digital transformation and application achievements of AI+PRA, and puts forward relevant prospects.

2. Characteristics of New Retail Enterprises

2.1. Offline Channelization of Sales Full Data

Merchants must first be able to ensure that the products can truly realize the simultaneous seamless connection of online store sales and offline retail, such as online stores, physical stores, cooperative micro-stores, franchise stores, etc. Integrating all kinds of the offline channel terminal of the entire retail network of the product realizes the integration of big retail data covering the entire product data, customer data, products, members, marketing, orders, inventory, warehousing, finance, services, and other aspects.

2.2. Digitization of Basic Business Elements

The use of information technology can realize a variety of commercial retail data scenarios, organize and summarize and analyze element data such as commodities, members, marketing, transactions, and service behaviors, and provide data basis for business operations and decision-making behaviors. Only when the basic management elements of retail operations Only when all digitization is realized can online business management and operation be basically realized.

2.3. Intelligent Management

Intelligent management can increase the number of customers and increase sales. In addition, the humanized management of the intelligent system is also to enhance the customer experience in the store further; to improve the convenience of shopping in the store for end customers. It is possible to directly set up touch screens, smart shelves, electronic price tags, smart cashier systems, face biometrics, real-time analysis and statistics of passenger flow data, VR, live broadcasting, and other interconnected devices anywhere in the store.

2.4. Customer Socialization

The basic condition for the realization of new retail is to require customer members to maintain a strong relationship with merchant customers, so merchants are required to work hard to convert those random and weak relationship customer members into strong customer relationship members. In the market, pay attention to the customer first, the core is the customer, and the customer experience is the center. By effectively integrating the existing high-quality commodity resource information and related characteristic product services of Merchants, shopping guides, Internet celebrity fans, makers, etc., can establish cooperative relationships with merchants, accurately and quickly locate the needs of brain-using customers, and dig out Its potential purchase needs. Using the network social ability and network preferences of target customers to carry out network communication and knowledge sharing, improve corporate brand awareness, and increase repurchase rate simultaneously.

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2.5. Socialization of the Supply Chain

Extend the supply chain, and transfer the right of goods, the person can sell her own goods, other people's goods, or even public goods. Not only that, but the person can also ask others to help sell their own goods, such as popular Internet celebrities who bring goods. Undoubtedly, it is also a transfer of cargo rights. It is also necessary to use structural upgrades to sell usable things and excellent services, knowledge, and skills, etc.

2.6. Orders on the Online Logistics Platform

The number of orders on the online logistics platform exceeds other offline payment orders. Merchants can also try to use the Internet to build a third-party online shopping payment platform and then deeply integrate with other domestic logistics offline platforms. For example, fast door-to-door delivery within 30 minutes of intra-city logistics, door-to-door arrival the next day, and regular door-to-door delivery. Various logistics methods such as drop-off, courier delivery, and door-to-door signing are convenient for finding potential customers offline who want to place orders and buy things immediately and improve the user perception experience of target customers' products themselves, which can be said to have greatly stimulated other customers. Purchase consumption so merchants can quickly make the order conversion rate of online transactions realized by various mobile apps, mini-program mall applications, and other applications that exceed offline.

2.7. Improve the Standardized Operation

The business process using digital storage needs to improve the standardized operation and operation ability of storage. (1) From operating products to enterprise users, establishing user relevance and consumption circles, the future of new retail business will sell good products to consumers and sell to potential consumers, shifting from commodities to customers. (2) Since a single customer acquisition channel faces more and more market risks, the new retail industry needs to have online and offline integration capabilities. (3) If the person wants to promote consumption, the person needs to improve the quality of goods and promote the experience. (4) Increase service frequency, "high-frequency service" will be the main battlefield retail news. Therefore, whether it is from high-frequency characteristics, user experience, efficiency, and cost, or consumption upgrades, the application of the new retail space is the most widely used and feasible.

3. Development Background and Status Quo of AI+RPA Technology

3.1. Introduction of AI+RPA Technology

AI+RPA technology is an enterprise manpower digital technology integrating various modern technologies. It can automate some manually operated work through software information technology, improve work efficiency and save labor cost and time cost. In the AI+RPA system, there are not only software kits and automation tools but also artificial intelligence AI technology with a learning function and intelligent analysis function, which can not only learn and imitate manual operation but also carry out intelligent detection and logical analysis [1]. In addition, there is robotic process automation (RPA) technology, through which the system can be programmed and automated to complete the repetitive work that is easy to deploy, operate, and maintain. In addition to the above technologies, the AI+RPA system also adds intelligent Business process management technology (i BPMS), an organic integration of AI technology and RPA technology with enterprise business processes, and comprehensive technology for coordinating people, machines, and enterprise business

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operations [2]. Under the coordination and integration of various technologies, it can effectively replace the manual to complete some business of the enterprise.

3.2. The Application of AI+RPA in new retail enterprises

In new retail businesses, AI+RPA technology can provide real-time reporting based on customer preferences and customer behavior on a particular product or product feature; Inventory management; Supply and demand planning; Product classification; ERP management; Logistics and supply chain management; see Figure 1 for details.

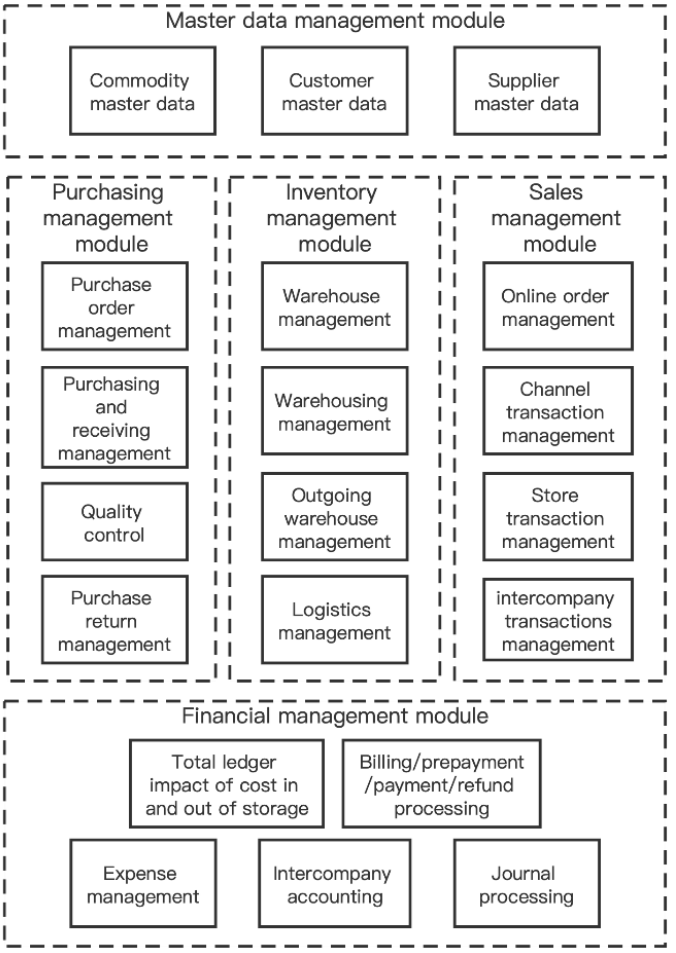

Figure 1: AI+RPA application in various sectors of the retail industry [3].
(https://kreader.cnki.net/Kreader/CatalogViewPage.aspx?dbCode=cdmd&filename=1020067506.nh&tablename=CMFD202002&compose=&first=1&uid=WEEvREcwSlJHSldSdmVpbEs1TVF4N1ZFZ2NlWGVMRlJFTVV0ZXFoUDdXYz0=$9A4hF_YAuvQ5obgVAqNKPCYcEjKensW4IQMovwHtwkF4VYPoHbKxJw!!)

The financial management plate is indispensable in all walks of life and has mature AI+RPA technology. Modern enterprises use the AI+RPA robot system to build a virtual financial team responsible for basic financial work, such as intelligent bill of lading, audit, automatic payment, cost analysis, etc., through the system's graphic recognition and text recognition technology. It can identify all kinds of invoices, documents, and all kinds of financial vouchers and classify, send, and receive them according to the identification results. Can realize automatic reconciliation, issuing statements, cash inventory, income recognition, accounts receivable statistics, and other work. If a problem is found during the reconciliation process, the system will issue an alarm and notify the relevant personnel. If there is no problem with the reconciliation of accounts, continue to carry out accounting

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treatment. Enterprises need to check, carry forward, and do other daily work on a regular basis. In order to ensure the economic benefits of enterprises, accounts should even be checked every day, which is the most basic and repeated financial work in port enterprises. In the system preset reconciliation logic program, the system can automatically check accounts, documents, and so on. In addition, the AI+RPA robot system can also be used for daily reimbursement work to check reimbursement documents, automatic payment, etc., and generate accounting vouchers according to payment information. When entering various financial data into the system, it will check whether there is any mistake and intelligently match the corresponding contract terms. If there is any mismatch, a red warning will be issued, and the financial staff will timely deal with it.

4. The Application of AI+RPA in the Digital Transformation of New Retail Companies

The new retail business model is to reconstruct the three core elements of the retail industry, "people", "goods", and "field" through digital technology to seamlessly integrate and accurately match them and form a new business form with online and offline integration [4].

This paper takes Freshippo, Suning.com, and Yonghui Superstores, three new retail enterprises, as examples. Relying on the supplier relationship management and customer relationship management system theory, the new retail business value chain is divided into the supply side, demand side, integration of industry and finance, and intelligent logistics four parts for AI+RPA application research and comparison.

4.1. AI+RPA in the Demand Side of New Retail Businesses

In terms of the supply side, authors have studied Freshippo, Suning.com, and Yonghui Superstores, three new retail companies under AI+RPA technology.

Through research, authors found that both Freshippo and Yonghui Superstores choose to establish a direct connection and channel with manufacturers and commodity production bases in terms of the supply chain. Through the development of direct sourcing bases to achieve a one-stop service for goods, direct sourcing, processing to logistics, and distribution supply. The whole supply chain reduces costs and accelerates supply efficiency [5].

In addition, Yonghui Superstores has designed the Super Species technology and the exclusive digital "YHDOS System" on the supply side, of which Super Species is a new retail species of quality fresh food and beverage + retail + experiential consumption created by Yonghui cloud to create relying on the global fresh food supply chain to provide consumers with a better consumption experience. The digital "YHDOS system" integrates the collaboration of procurement and sales, operations, and finance across all channels, enabling the sharing of goods between home and in-store warehouses, reducing the supply and loading process, and significantly improving efficiency.

Freshippo also has supply technologies such as the Rexos retail operating system in terms of supply. It links the supply and demand sides, targeting quality suppliers, orderly screening and selecting them to provide higher quality supply items, and constantly using consumer demand feedback as a reference for an updated selection.

Unlike the above two domestic companies, Suning.com' application technology on the supply side is geared towards the internal side of the business. Suning.com RPA digital staff collectively develop, deploy, release, dispatch, monitor and manage in one system every holiday promotion, which is able to simulate human workflow for high-volume, repetitive, and mechanised manual operations, thus automating them and achieving substitution in supply chain monitoring and dynamic replenishment. It solves the replenishment problem and allows consumers to shop smoothly throughout the process [6].

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Through the above comparison, different enterprises have adopted different supply technologies and methods in the face of different products. And there may be similarities between the techniques used by companies with similar products and methods worth learning from each other [7].

4.2. AI+RPA in the Demand Side of New Retail Businesses

On the demand side, authors studied the technology and methods used by the three companies to sell their goods to consumers.

In terms of the demand side, companies with common points are Suning.com and Yonghui Superstores. Both adopt different online and offline model sales methods. The online and offline sales of Suning.com are distinguished and sold through different product structures. With the main focus on large packaged goods and fresh produce, using one-hour delivery, fresh produce booking, and Tesco Select services, allowing customers to choose to spend in various areas.

The online and offline sales model of Yonghui Superstores is the integration operation of omni -channel development. The online and offline sales model of Yonghui Superstores is the integration operation of omni -channel development. By opening a member store to y the needs of offline customers and providing better services, the online aspect, Yonghui Superstores member store uses its own physical store as a front warehouse to open online sales channels. Online sales can form incomplete supplements to offline orders. This online and offline integration model can gradually attract more consumers around the store.

All three companies sell through their own corporate-related APPs. Suning.com's Suning Small Store app applied for a new O2O model. Users can choose to send home services through the APP, and There is also a community group event. This is based on the combination model of "social+cost -effective products, online app+offline stores", and uses Suning's small store points to lay out the semi-acquaintance social characteristics of the community [8].

Freshippo collects customer shopping information through their APP, analyzes customer demand preferences, predicts the trend of demand in the market, and formulates procurement plans.

Yonghui Life is an app under Yonghui Superstores that focuses on "fresh food e-commerce instant delivery to home", it provides consumers with safe, healthy, and cost-effective fresh ingredients, quality products, and a caring consumer service experience. The Yonghui Life App enables self-service and intelligent consumption, such as purchasing and payment in its shops, as well as online ordering and "no-touch delivery" to customers' home, with delivery as fast as 30 minutes and exclusive online member prices.

In addition to the online and offline integration sales model and APP, there is also a new business format that relies on the digitalization capability of the whole channel, the warehouse shop. Through "technology" in all scenes, Yonghui warehouse shops offer the same price for goods online and offline, and the digital construction of members is becoming more and more complete. And through stores, the width of home business products is greatly improved, the selection efficiency is improved, the output rate is reduced, and the delivery service of home delivery services is more optimized, faster, and more convenient [9].

Finally, the unique sales technology of Freshippo need demand side. It excavates information through big data and popular social platforms to understand customer preferences. Through these preferences and needs, provide specific products to relevant consumers. There is also the AI smart cash register ReXPOS, which combines various algorithms to achieve intelligent loss prevention and fast checkout, and the intelligent cooking and delivery system ReXMEDIA, which solves the problem of long waiting times for customers through standardised cooking of dishes and delivery in around 40 seconds. The RexMedia system is based on the interpretation of fresh retail product characteristics, combined with multimedia creativity and applied electronic technology to achieve marketing and product promotion services.

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4.3. AI+RPA Application in Financial Management

With the development of the omni -channel of the new retail industry, digital financial management has become the general trend. The application of AI+RPA technology aims to break the traditional working model to realize the integration of business and finance. The multi -dimensional business data such as members, goods, and store warehouses is introduced into the middle platform through RPA. Relying on AI intelligent processing, financial indicators will serve corporate risk forecasts, sales expectations, strategic deployment, and so on.

In the specific application analysis of the three companies, authors have divided financial activities into three major accounting modules, management accounting, and informatization, based on the overall structure [10].

Freshippo collects data through self-developed ReXOS operating systems in financial management, using AI technology to realize data visualization and multiple applications [11]. The specific application types are divided into four types: descriptive, diagnostic type, predictive type, and prescription type. The financial data is classified and processed, respectively, the reason for the occurrence, future trends, and response strategies.

Yonghui superstores are also based on the company's self-developed system, YHDOS cooperating with AI+RPA technology to achieve its innovative development of financial data processing and digitalization of employees in the store and improve corporate financial management efficiency.

Suning.com is different from the previous two companies. Based on the digital operating system, it has built targeted financial robots [12]. Among them, the transaction processing type, including invoices, tax reporting, main data annual report filling in form, industrial and commercial annual report filling in the form, exchange rate automatic maintenance, offline daily knot data entry, and other system operations; fixed rules reviewed robots, including reviewing various types of expenses reimbursement Automatic review with offline daily knots; data check-up robots, including bank - enterprise reconciliation, business return, after-sales contracting service fee automatic account clearing, after-sales business vouchers clearing, rebate, and supplier automatic account clearance robot; monitoring and processing robotics Including operation and maintenance robots, contract processing robots; data export processing robots, responsible for generating reports.

From a macro perspective, the three companies of Freshippo, Yonghui superstores, and Suning.com have the application of AI+RPA technology in the financial sector. Still, most of the three companies stay in the data finishing part of financial work. In addition, there are many market variables, and the fitting effect of business sales and other predictions still needs to be improved. It can be seen that the combination of financial data and AI technology needs to be in-depth, more intelligent, and effective risk prediction, market insight, and strategic guidance will become the development direction of AI+RPA technology in the new retail industry.

4.4. AI+RPA is Applied in Logistics

Logistics is the key to linking the supply side of new retail companies, stores, and demand. The application of AI+RPA in logistics is mainly concentrated on integrating people, goods, and venues [13].

Freshippo has independently developed logistics, applied AI+RPA technology to Automation equipment RFID Internet of Things, and constructed a fully automatic suspension logistics system. The background intelligent performance set algorithm is guided by line-based, timeliness node order, customer needs, temperature layers, block distribution, and the entire POI algorithm to match the optimal distribution solution [14].

Yonghui superstores have independently constructed the warehousing robot system. Yuncang WMS and Xintu TMS are "key products" used by Suning.com Logistics to solve warehousing

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management and transportation services [15]. Relying on the "Sky Eye" data engine support, it is collected from RPA technology, barcode technology, AI algorithm, and 5G technology. They are improving the response capabilities and benefits of the corporate supply chain.

After comparison, it is found that the application of new retail companies' AI+RPA technology in logistics has been deepened.

5. New Retail Industry Development Status and Suggestions

In the process of new retail enterprises' transition to omni-channel industry, digitalization, intellectualization, and socialization, in the face of rapid economic development and market uncertainty, problems such as immature industrial chains and difficulties in digital transformation are still exposed. This is embodied in the following aspects: First, there is a digital divide between the middle-aged and the young generation. The new retail industry faces problems such as limited coverage and insufficient customer volume in customer orientation. Second, the application of AI+RPA technology requires high research and development costs. Most enterprises have not invested much in digitalizing the whole industrial chain, and AI+RPA technology is still growing in new retail enterprises. Third, some new retail enterprises have problems such as immature digital processes and product use, unsuitability to the actual situation of enterprises, narrow channels, etc. Fourth, in new retail enterprises promoting digital transformation, there are big risks, such as low approval efficiency, users' information security can not be guaranteed, and economic risks that are difficult to predict. Fifth, at present, the digital network of most enterprises is still not sound enough, and the channels are not broad enough. In the process of digital transformation at the supply and demand sides, they only stick to a certain existing business or procedure and lack the exploration of the overall and the whole industrial chain.

Optimization can be carried out in the future development process of new retail enterprises from the following aspects. Faced with the problem of limited customer coverage, enterprises should do detailed customer digitization and deepen customer insight. Based on the stratification of target customers, establish the adaptation between customers, products, and channels. Based on the target customer group, establish personalized marketing reach and service model; Through the establishment of a unified, scientific, and systematic customer experience measurement and monitoring system, continue to improve the ultimate customer experience. Facing the narrow channel problem, enterprises should do new channel digitization and build super-channels. "New Retail" will evolve from omnichannel to super channel, build a wealth management business model with non-linear growth, build a super-channel service network for hundreds of millions of customers, and realize the best adaptation of all customers and all products along the customer journey. Faced with the problem of weak risk control ability, enterprises should do a good job in digitized risk control, risk prevention, and control in advance. Continue to improve the intelligence and automation level of risk management, approval efficiency, risk insight, and decision support ability. The machine learning algorithm is constantly refined to help improve the model's efficiency, and the data-driven intelligent risk control level and the accuracy of the whole-process digital measurement tools for risk identification are constantly improved. In the face of the lack of the whole industrial chain layout, enterprises should do the best product digitization and improve the supply capacity. Focusing on the whole life cycle of products, authors use digital technology to improve internal management efficiency and optimize the product service to customers. Make deep operation digitization, and create operation ecology. Authors will continue to improve our digital intelligent operation capability, build an advanced all-channel collaborative operation platform in the industry, and empower the upstream and downstream industrial chain [16].

6. Conclusion

This article comprehensively studies the new retail digital transformation of AI+RPA. Based on the supply and demand analysis of Hema XianSheng, SuNingYunShang, YongHui Supermarket, and other enterprises. The research results show that AI+RPA improves the work efficiency of new retail enterprises, reduces system maintenance requirements, better meets the needs of contemporary customers, and enables corporate strategies to continuously and rapidly adjust decision-making recommendations. Use AI+RPA to make the data of new retail enterprises more insightful and make employees more valuable. This paper's study can help enterprises have a clear goal for the future development direction and provide development ideas. It is possible to further study the application of AI+RPA in digital transformation at the three levels of business, organization, and strategy, and how to build a new future of financial digitalization.

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