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Study on the Application of Intelligence Technology in the Warehouse

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Abstract*:* Because the continuous dynamic of orders that the goods of warehouse are in fast changing state, the traditional management can't meet the actual operational needs. The applications of new technology in the storage of wisdom can effectively improve the operating efficiency and enhance market competitiveness.

Keywords Warehouse; Intelligence technology; Informatization

INTRODUCTION

As the connection link between producers and consumers, warehousing plays a crucial role throughout the supply chain logistics system .The traditional simple and static warehousing management has a common that warehousing holds a huge amount of material inventory, material tracking difficulties, lower turnover funds and material efficiency, high labor costs, logistics management information and tools behind other shortcomings affecting the competitiveness of enterprises [1].

The application of the Internet of things, cloud computing and big data as the representative of the wisdom technology in China has achieved initial success; the industry application of technology played a good example model [2], the effective use of intelligence technology in a warehousing system can improve operating efficiency and enhance the competitiveness of enterprises.

THE WISDOM TECHNOLOGY

Wisdom

The wisdom is to use modern technology on the entire warehousing system's data acquisition and data mining to analysis and found out the law to replace the traditional part which needs to be manually determined can bring functional automation and decision support.

The Wisdom Technology

The wisdom logistics technology and idea is the core concept of wisdom logistics which is a cross-platform logistics model, through information sharing, resource sharing, integration of industrial chain, strong and intelligent operation data-based, providing optimal logistics solutions for the logistics companies and the comprehensive solution.

Wisdom refers to computer technology, information networks, artificial intelligence and physical networking and cloud computing technologies merge together to form a machine "intelligent" integrated technology. Wisdom is the core technology of computers (cloud computing) to simulate human intelligence activities in the procedures (such as analysis, reasoning, judgment, ideas and decisions), thereby expanding, extending and partially substitute mental achieve knowledge-intensive production and decision automation [3], the future technology as to a higher level logistics industry application, there is a huge space for the wisdom as representative [2].

THE APPLICATION OF INTELLIGENCE TECHNOLOGY IN THE WAREHOUSE

Warehouse goods are in a dynamic change process, the electronic information network technology is a very fast development of modern society in the field of technology, which can be said to have a very strong and dynamic innovation [4]. This field will mainly involve the construction of inventory control, distribution management, traceability and other modern logistics applications, logistics and public service platform construction across regions, industries, sectors, to achieve the integration of e-commerce and logistics management.

The IoT and its Application in the Warehouse

He IoT refers to radio frequency identification devices, infrared sensors, global positioning systems, laser scanners and other information sensing device, according to the agreed protocol, the articles connected to the Internet, information exchange and communication, in order to achieve intelligent identification, location tracking, monitoring and management of a network [5]. The IoT are divided into three levels of key technologies (perception layer, network layer, application layer) including radio frequency identification (RFID), smart sensor

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technology, cloud computing and remote wide-area communications to things and objects connected the basis for the application of technology, warehousing and complete from the "informed" to "sense" changes. RFID also has data storage capacity, wireless passive, compact and lightweight, long life, waterproof, anti-magnetic and anti-counterfeiting security features [6].

The basic principle of RFID system is shown below as Fig. 1.

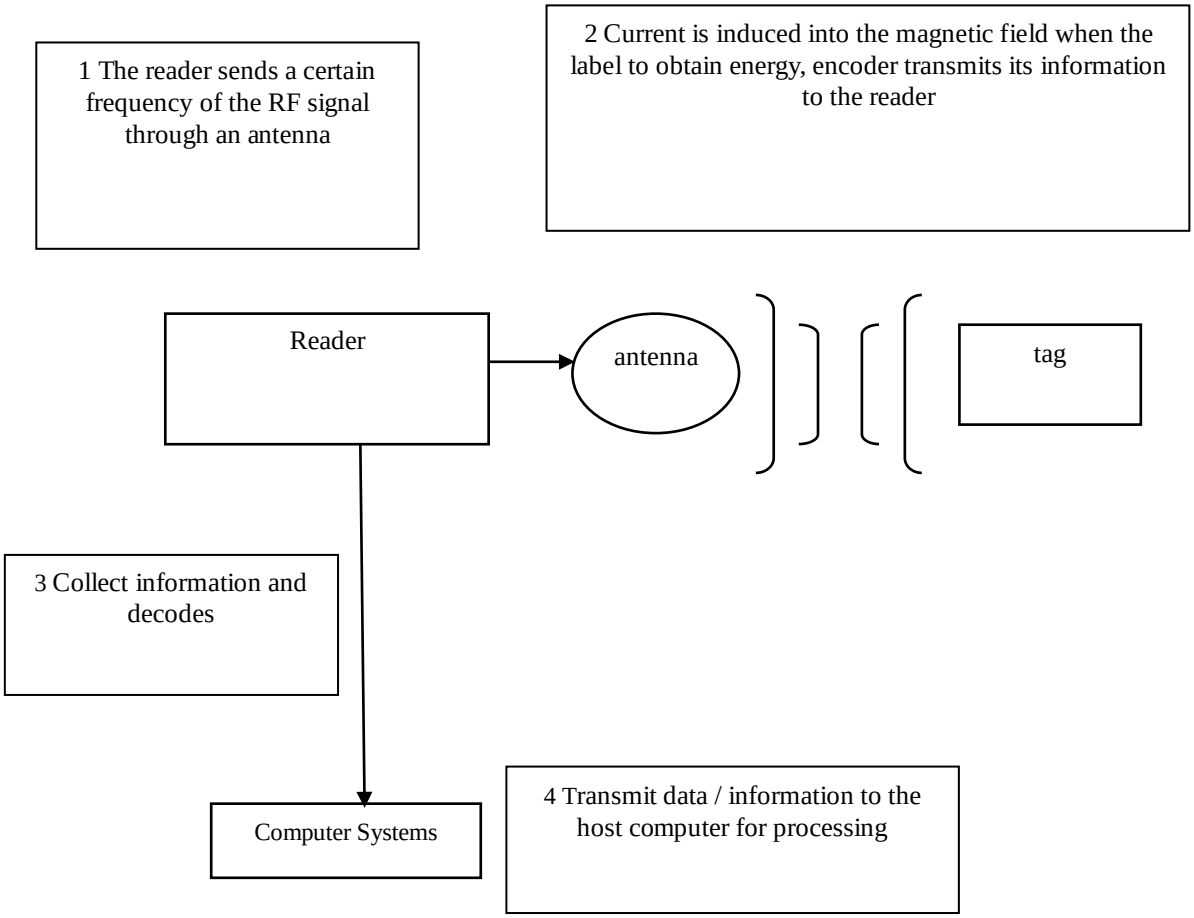

Figure 1. The basic principle of RFID system.

Enterprises can make use of the advantages of RFID technology to change the existing warehouse management, focus on key business, efficient and accurate completion of daily work, eliminate uncertainty, reduce inventory, improve storage utilization, increase productivity while improving warehouse effectiveness, so that all aspects of warehouse management modernization, automation, intelligence, scientific intelligence warehouse management, improve the income level.

The use of RFID and other Internet of Things technology can achieve real-time updates information of goods storage, inventory, according to the order picking package, a library, and returns and operating systems, to facilitate the storage and control personnel have accurate data in real-time dynamic, inventory control can be counterproductive improve inventory throughput, reduce warehouse load and improve the efficiency of warehouse management.

The Internet of Things technology's application in storage operation (in storage, for example) flowchart is as below Fig 2.

Data Mining and its Application in the Warehouse

Wisdom of the system can automatically analysis system developed on the basis of data collected decisions, reduce manual intervention, to improve the response rate, and by analyzing the data to correctly understand the value of the data it contains. Advanced analytical and modeling techniques can be a good help decision makers analyze the risks and constraints of extremely complex to evaluate various alternatives.

Data mining technology links artificial intelligence, statistics, computer and database technology closely [7], extract data that people interests from the mass of information, found relationships among the data characteristics and potential unknown data to meet decision support.

Data mining techniques can identify potential or direct relationship between the goods by analysis a large number of past order data, to better use of storage space, easy to operate the library, improve operational efficiency.

THE PROMISING OF THE INTERNET OF THINGS TECHNOLOGY'S APPLICATIONS IN WAREHOUSE MANAGEMENT

Intelligent storage networking solution to the traditional warehouse management process efficiency and lower logistics information processing inaccurate inventory out of storage problems, the system out of storage, monitoring, aspects of inventory, order picking, etc. with fast, convenient, accurate and efficient and highly automated, etc. advantages [5]. In modern logistics, networking has demonstrated its positive role in promoting, with the continuous improvement of system reliability, confidentiality and growing environmental adaptability, networking technology will play a greater role in warehouse management.

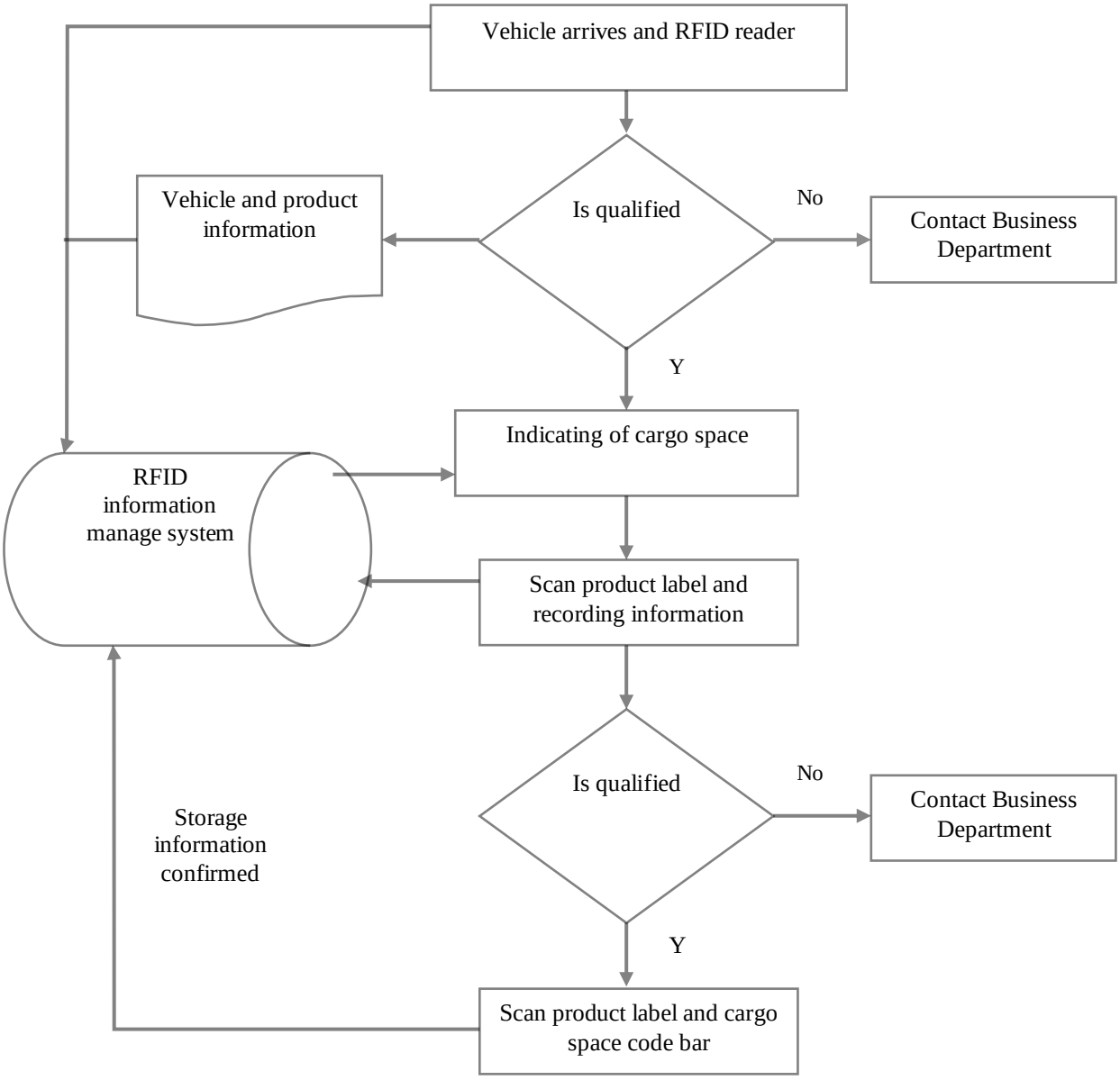

Figure2. The Internet of Things technology's application in storage operation (in storage, for example) flowchart

Meticulous Resource Management

The use of remote communication technology, the underlying intelligence LAN networking can all be tied together LAN storage unit. Relying on the wisdom of management systems, material information at any time can be aggregated and queries to maximize the efficiency of supply and demand side and warehousing party supplies, improving efficiency and utilization of materials circulation.

Generation Storage Solutions Automatically

Before storage of materials, networking systems based on the type of materials, quantity, size, storage requirements, and the required storage conditions, etc., automatically proposed location for the program for warehouse management decision-makers to select

and reference, including storage, stacking structure, transport and storage methods, and networking notify the unit through the objective. When the storage, warehouse facilities AutoComplete information literacy work. Automated warehouse, the automatic transmission control system according to the needs, automate supplies out of storage [8].

Automatically Implement all Aspects of the Logistics Supply Chain Network Collaborative

GIS technology is an important acquisition, consolidation, geospatial data management and analysis tools. Through the collection of geographic data modeling, analysis and display, GPS satellite navigation and positioning technology integration, RFID technology, sensor technology, intelligent technology, the entire process in the logistics vehicle location, transportation product positioning and monitoring, online scheduling and distribution vehicle visual management system.

GIS will further cooperation with internal ERP, CRM and other systems to provide data for the whole enterprise decision support analysis [9].

After feedback, through the large number of logistics data analysis, logistics customer demand, inventory and other goods made in all aspects of the data generated by judgment, to help businesses find the current shortage, improve and develop future business strategy.

Improve service quality

At this stage, China's logistics enterprises and foreign enterprises to compete key lies in "customer service." Therefore, we must break the existing closed-end logistics system architecture, provide customers with real-time information exchange interface, providing online customer inquiry service, e-mail, SMS and other forms of service. The ultimate realization of customer information integration between systems, information systems through timely delivery, and strengthen business and customer contact tightness to improve timely information services to improve enterprise competitiveness.

CONCLUSION

The opportunities and challenges for the logistics industry, information, and intelligence will become the logistics enterprises to improve enterprise management mechanisms, improve service levels, enhance business efficiency "weapon".

RFID technology enables the number of goods, of cargo space and other information, accurate grasp of the cargo supply chain to achieve real-time monitoring to ensure that the inventory of high visibility, and greatly improve the efficiency and accuracy of picking and distribution process. Application intelligence technology ensures reduced manufacturing and distribution personnel costs while ensuring high accuracy, and speed up the decision-making process to improve the problem lay a solid foundation. However, the construction of things the entire logistics industry there are a lot of work to do, after the monopoly industries to gain experience, you have to enter to serve the whole community of common logistics industry. Looking to the future, a high-precision, real-time transparent "smart logistics" will be presented in front of us.

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