

Information Development of Intelligent Logistics Storage in 5g Era

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Abstract: in recent years, under the dual promotion of economic globalization and e-commerce, traditional logistics is rapidly transforming into modern logistics and becoming the future development trend. Smart logistics has become the key factor to promote the transformation and upgrading of modern logistics. The continuous development of internet of things, big data and other technologies has brought great influence to all walks of life. The article puts forward that vigorously developing storage management informatization is an important guarantee for the rapid development of intelligent storage. Developing the application of intelligent storage and rfid technology in storage management is the future development direction of storage management informatization. This article will start with the understanding of 5g technology and intelligent logistics to discuss the intelligent logistics in the internet of things era.

1. Introduction

5g, the fifth generation mobile communication technology, is characterized by high transmission rate, short port delay and large network capacity. In the future, the download speed of 5g network can reach tens of gbps (gigabit switching bandwidth), and the network response is more sensitive and will not collapse or jam [1]. As an important part of modern logistics, warehousing not only undertakes the task of storing goods, but also needs to better link up with the upstream and downstream of the supply chain to improve the efficiency of warehousing operations and service quality. Therefore, information, automation and intelligent intelligent warehousing will become the future development goals. With the diversification of commodity types and the individuation of demand, the interior of modern storage system not only has many items, different shapes and different performances [2]. Moreover, the operation process is complicated. As an important factor in social and economic development, informatization and networking are also an indispensable part of warehousing logistics. In this environment, the manufacturing industry is increasingly pursuing lean production, which requires real-time, accurate and efficient logistics in the factory. With the popularization and application of 5g technology, the domestic logistics industry will usher in new development opportunities and have a bright future in the smart logistics market. As an inseparable and important part of 5g industry chain, logistics will undergo great changes due to the generation of 5g. Therefore, 5g is of self-evident value to logistics.

2. Definition of Intelligent Storage

Intelligent logistics needs to use rfid and sensor technology to realize accurate information on the whole process of goods from purchasing, warehousing, allocation, distribution, transportation and other links, and use information flow to accurately control the logistics process so as to maximize profits [4]. Can provide cargo owners with logistics planning, improvement and optimization of logistics operation system; able to provide logistics services to different industries (multiple shippers); ability to provide comprehensive logistics services (warehousing, transportation, etc.); the intelligence at this time is “automation+informatization”; however, with the development of today, the emergence of the internet, or the internet of things era, the meaning of intelligence has taken a step further. It is not enough to make judgments and choices only by collecting information automatically, but also to connect with the network. Energy logistics is the integration of operation links, operation processes and subsidiary management in the process of logistics activities with the

help of current information technology, so that the system has the ability to learn, reason and judge and solve some problems in logistics itself [5]. Logistics services capable of providing modern facilities; logistics information system is transforming from isolated island type to integrated multi-functional intensive management. Having a good external data interface (interfaces of other application systems and interfaces of various automation equipment); at any time, the collected information is transmitted to the data processing and service center (hereinafter referred to as the data center) through the network for real-time adjustment. This kind of dynamic control and dynamic automatic selection is the intelligence of this era. It has three characteristics, namely automation, informatization and networking.

3. Tbl Lightweight Logistics Automation

T B L light-weight material flow automation, i.e. modular material flow automation based on “A I o T”, energizes storage facilities through I o T+B I +A I, reconstructs the original facilities of the warehouse, installs intelligent internet of things hardware, and endows storage facilities with sensing, positioning, identification, communication and other capabilities [6]. The existing freight yard equipment will be optimized and renovated to build an automated warehouse for the logistics park and introduce more efficient storage and distribution facilities and equipment. With the rapid development of the storage industry, more and more attention has been paid to intelligent storage, which has become the development trend of the future storage industry. Each shelf “knows” what it should contain and each truck “knows” what it is carrying. For example, if the shelf indicates the material truck, put the first box on the right on the designated shelf, and inform the staff or the machine how to operate through lights and numerical instructions. Intelligent logistics is the embodiment of the application of Internet of Things technology in the field of logistics, and is the basic way of logistics modernization. Obviously, warehouses play a key role in the process of material flow. The future warehouse logistics system will develop into an integrated integrated logistics supply chain management information system according to the requirements of logistics supply chain management [7]. Equipment and people can also interact better, which can greatly reduce the intensity of human labor and improve the efficiency of operation. Therefore, the research and application of intelligent control is the core to realize the operation of intelligent storage system.

Third party logistics belongs to the category of supply chain logistics and is also one of enterprise logistics. Therefore, the third party logistics system also has the characteristics of enterprise logistics system [8]. The so-called enterprise logistics system refers to the production of raw materials input, storage, processing, packaging, transportation and after-sales service as a whole system. Figure 1 shows the general process structure of an enterprise logistics system.

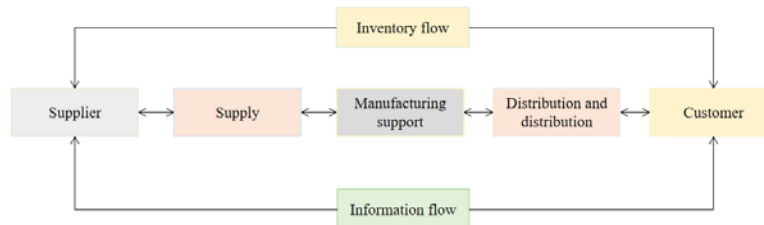


Fig.1 General Structure of Enterprise Logistics System

Third-party logistics not only has the characteristics of general enterprise logistics, but also has the characteristics of informatization, contract orientation, personalized service, supply chain alliance, etc. Therefore, the third-party logistics system should not only attach importance to the smooth flow of logistics operations, but also attach importance to docking with the logistics systems of suppliers and receivers of upstream and downstream enterprises. Figure 2. Shown.

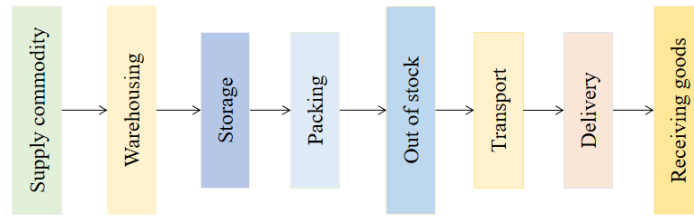


Fig.2 Basic Operation Flow of Third Party Logistics

The realization of lightweight logistics automation concept and scenario is based on TBL's industrial Internet of Things technology (including automatic perception identification, passive/active location, mesh communication networking, perception failure prediction, etc.) and big data intelligence technology. According to the characteristics of customers, targeted information push can be carried out to improve the benefits of railway freight transportation. At the same time, a wide variety of new technologies need to be integrated and used. To provide a trans-regional, national and even transnational logistics service for suppliers and consignors, it has a common basic data module and a core modular order processing. After the warehouse receives the order from the sales department, the outbound management module groups reasonably according to the pre-set rules, identifies the order and makes scientific arrangements. According to the order standard, the outbound management module forms the picking scheme independently. In this way, the worker's brain can be liberated and the human can play the role of a manipulator. The integration of intelligent logistics refers to the integration and systematization of intelligent logistics activities. It takes intelligent logistics management as the core and integrates transportation, storage, packaging, loading and unloading into an integrated system to provide customers with satisfactory logistics services with high efficiency.

4. Warehouse Information Management System

The warehouse management system connects the various links of the warehouse more closely. Through the reasonable arrangement of warehouse scheduling, it combines the receipt, inquiry, storage and delivery of goods. According to the need to increase packaging, scheduling and other functions, to form a streamlined operation, to solve the problem of integration and optimization between information systems of various automation equipment. The requirement analysis is used to build the system requirement analysis model, which mainly applies UML to analyze the domain role, business analysis and use case model of the system. Barcodes are introduced into warehouse management, eliminating the steps of manual writing of bills and sending them to the computer room for input, and solving the problem of outdated warehouse information. The benefits brought by this system far exceed the development cost of the system software and are completely feasible in economy. Including logistics planning, order scheduling, business collaboration, resource integration, process optimization, loading optimization, route optimization, inventory optimization, cost minimization, the execution system of logistics operations has warehouse management. Most enterprises in fully automated warehouses have no ability and demand to build, and traditional information warehouses can no longer meet the logistics needs of enterprises, which shows that enterprises still have a huge market for intelligent upgrading of warehouses.

Nowadays, the maturity of logistics development is far from meeting the needs of the rapid development of e-commerce, which has become the bottleneck of the development of e-commerce. As an important part of logistics, storage is also the focus of contention. It consists of barcode scanner, amplification and shaping circuit, decoding interface circuit and computer system. Bar code reader can quickly identify bar codes. Administrators have the highest authority over the entire system, including setting up common users, modifying and deleting information, managing inbound and outbound, deleting and adding users. Ordinary User: Description: The main functions in the system are logging in and logging out of the system, inquiring about the item information, receiving and sending information and other activities. Materials are stored and moved in the logistics

network, and supply chain members jointly control information related to themselves in the logistics network. In the customized flexible production process, a variety of production factors need to be deployed and assembled in the same logistics space, which shows the value of warehouse logistics optimization. The application of storage management system in railway storage is still in its initial stage. Storage management information system can organically combine various technologies to form a whole, well connect the whole storage activities, make the whole warehouse run more smoothly, and ensure the orderly storage activities.

5. Application of 5g in Intelligent Logistics Storage Informatization

5.1 G + Logistics Storage Equipment

Traditional mechanical robot equipment can no longer meet the needs of users of manufacturing, storage and e-commerce. It needs the ability of robots to organize and cooperate to meet flexible production, which brings the need of robots for cloud. From simple delivery service to comprehensive logistics services such as warehouse management, inventory optimization and supply chain management, the industrial chain will be extended to obtain more value distribution. Its basic function is to provide information related to the product warehousing list, and at the same time, to allow query operations for product information via the product EPC code. Based on a platform with ultra-high computing power, real-time operational control of the production and manufacturing process is carried out through big data and artificial intelligence. 5G network is an ideal communication network for cloud-based robots and is the key to cloud-based robots. The application of radio frequency identification to the storage field can effectively manage goods, reduce the short time for goods storage acceptance, accurately and quickly inventory warehouse goods, facilitate warehouse goods inquiry, improve warehouse picking efficiency, reduce the theft rate of goods in the warehouse, etc. Massive equipment connected to 5G network will also bring abundant data resources to artificial intelligence system.

5.2 G + Logistics Tracking

At present, in the market environment where robots interact with people, the tracking of personnel, transportation of high-end products, etc. has greatly limited the growth of the market due to the high connection cost. Cooperate with more industries, from service network retail to service manufacturing, modern agriculture, technology and finance design exhibition and other modern service industries; According to the order standard, the outbound management module forms the picking scheme independently. According to the picking plan, scientifically set the order picking task. However, the operator reasonably guides the goods location via the radio frequency terminal and selects according to the selection scheme. The improvements provided by 5G will include optimizing logistics in a wide range of industries, improving worker safety and improving asset positioning and tracking efficiency, thus minimizing costs. It will also expand its capabilities to dynamically track a wider range of goods in transit. For example, users are allowed to log on at a single point, and multiple systems are interrelated, thus eliminating the trouble of registering for many times. Through the complementary information in multiple systems, the customer information is more perfect, the circulation information of goods can be more comprehensive and convenient to query through the combination of various systems, and the railway cargo owner and goods information can be analyzed through big data after integration. With the increase of online shopping, asset tracking will become more important. In addition, the end-to-end integration of the virtual factory spans the entire life cycle of the product, connecting widely distributed sold goods. Judging from the current situation, the main direction of future storage development is not only the expansion of storage connotation, process and coverage, but also the increasing specialization, standardization and informatization of storage management.

5.3 G + Unmanned Distribution Equipment

Express delivery robots are equipped with a large number of sensors, but domestic delivery

robots still have many problems in key technologies such as calculation, vision and driving. Smart Express Service Smart Manufacturing will become standard, and modern supply chain will become the top priority for high-quality development. Corresponding reader-writers are arranged at the entrance and exit positions of the warehouse, automatic identification is carried out based on relevant products, certain information is read through the hand-held reader-writer, and the obtained EPC code is transported to the information acquisition software through the data acquisition interface, so as to carry out further processing. 5G can make powerful machine vision as convenient as human eyes. The anti-interference feature can make the city scene with dense high buildings and complex electromagnetic environment no longer a flight forbidden zone. Provide good information support for the upstream and downstream of the logistics system, promote information mobility and improve information security; Warehouse management is not only a split and single warehouse management, but is interconnected through the cloud. The core of modern logistics and supply chain management theory is to build an optimized logistics network and make the materials in the logistics network organically link up and down the supply chain. The use of Internet of Things technology to develop intelligent logistics has a wide range of fields, mainly including intelligent transportation management system, RFID-based intelligent warehouse management system, intelligent distribution management system, intelligent packaging system, RFID-based logistics security system, and intelligent pledge supervision. Therefore, every 5G base station, including macro and micro stations, can become a necessary infrastructure carrier for future low-altitude airspace management, and become a “road” and “signal lamp” for low altitude.

6. Conclusion

The warehouse information management system is aimed at different users. It realizes the diversified management of users and warehouse goods information, making it more convenient for administrators to manage warehouses and lower-level warehouse management personnel. The intelligent warehouse management system based on the Internet of Things technology applies the Internet of Things technology to the warehouse management system, filling in different levels such as difficult product identification, inconvenient information acquisition, low degree of automation and low manual dependency, and truly realizing the standard of warehouse information. Based on the concept system and framework of lightweight logistics automation, the system framework has been continuously studied and improved, and further polished and optimized to make lightweight logistics automation more standardized and modular in practice, thus meeting the needs of enterprises for higher intelligent storage. I believe that under the new changes of 5G network reconstruction and capacity upgrading, 5G technology will promote the fission development of the logistics industry and form a 5G ecosystem. At that time, the 5G logistics industry, which contains trillions of yuan of opportunities, will be on the verge of explosion.

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