

Research of Smart Logistics System Based on “Internet+”

Gaoan Li, Zhongshun Wei, Dongyuan Ge*

College of Mechanical Engineering, Guangxi University of Science and Technology, Liuzhou, Guangxi 545006, China
Corresponding Author: gordon399@163.com

Abstract—With the development of the logistics system, the experience of server and server are put forward the higher request, the role of logistics is the most basic is to save human wisdom. In addition, the logistics system of intelligent system enables express parcel arrived at the station, through the control of SCM, can realize the key warehouse and bulk SMS, so that a large number of parcel fast circulation, reduce the labor intensity and save to send information to the customer’s trouble at the same time, namely, change numerous for brief, greatly improved the work efficiency. And most importantly, logistics system can realize humanization and intelligence, security, and the balance of convenience for the user to create the perfect unloading service experience.

Keywords—Internet +; Smart logistics; SCM; Face++

I. INTRODUCTION

Along with the development of science and technology as well as the daily matured internet technologies, there are more and more quantities of people online; meanwhile, the online modes are also increased. People can conduct various activities through various modes: such as online shopping; currently, people can purchase goods without going out, and along with it are the increase of express quantity and the fast development of logistics system. According to the data of Chinese Logistics Information Center, the total social logistics amount in China had reached to RMB 229.7 trillion in 2016, and the total logistic amount reached to RMB 252.8 trillion in 2017, and from 2010, the compound growth rate was 10.53%, indicating the development of logistics system. However, the current logistics system cannot meet people’s expectation, so it is requested to continuously conduct smart transformation intelligence. Thus, it is an important development trend for the development of logistics industry considering the combination of modernized science and technology, and the perfection of logistics system. In the face of the increasingly severe reform trend of informatization era, the logistics industry applies big data mode in the development process, reinforces the construction of smart logistics, accelerates logistics system efficiency, improves the logistics level, and improves more satisfying services for consumers [1].

II. RELEVANT ANALYSIS ON SMART LOGISTICS

Smart logistics refer to using integrated smart technologies to make the logistics system stimulate people’s intelligence, and possess thoughts, perception, learning, judgment and the capacity to solve some problems in logistics. The future development of smart logistics will reflect four characteristics: intelligence, integration and layering, flexibility and socialization. Lots of planning and management as well as decision-making intelligence in the logistics operation process; take the logistics management as the core, realize the integration of transportation, storage, package, loading and unloading as well as other links in the logistics process and the layering of smart logistics system; the development of smart logistics will highlight more “customer-centered” concept, and as per the changes to the demand of consumers, flexibly adjust the production technology; the development of smart logistics will promote the development of regional economy and the optimized configuration of world resources, and realize socialization. It will follow the four smart mechanisms of smart logistics system, i.e., the smart information obtaining technology, smart transmission technology, smart processing technology and smart application technology [2].

The smart logistics park uses automatic recognition, data digging and other technologies as the core, and is oriented to the logistics industrial chain, and has realized the automatic management of material in-warehouse, and the intelligence of sorting, ex-warehouse, inventory and express delivery process, and largely improved the efficiency. The entire warehouse adopts “moving goods, and fixed personnel” mode, i.e., the system can dispatch the scanning device, bypass flow device, robot arm and other devices as per the order to realize control, while workers only need to conduct necessary monitoring and other operations at the operation terminal of the workbench, which can largely decrease high manual operation strength, complicated business and other pain spots. Moreover, this scheme has decreased the capacity requirement for working personnel, with no need for arranging employees with several years of warehouse experience, and it only needs 30min training for new employees to take up posts, save lots of training resources for enterprises, and improve the safety of manual operation [3]. In the transportation process, it is constituted by positioning and feedback system and customers can query the relevant information about the express as well as accurate distribution arrival time, and let consumers reasonably arrange their work, to prevent it from influencing the receiving

of important documents, and delaying normal working procedures; meanwhile, it can also largely save the time for consumers to wait for the express, and make consumers reasonably arrange time, to prevent from wasting the waiting time of customers.

III. KEY TECHNOLOGIES CONSTITUTED BY SMART LOGISTICS

The core for building smart logistics is data driving, and social cooperation. Currently, Cainiao Yizhan, artificial intelligence technology and service provider Face++ have realized cooperation, and made the face recognition technology online at the smart express cabinets among above 60 Cainiao Campus Posts in Jiangsu, Zhejiang and Shanghai.

Through cooperating with Face++ artificial intelligence opening platform, Cainiao Yizhan can facilitate the smart express cabinet of various campuses to access to the face recognition capacity under the internet information sharing of big data, and each person only need to input face recognition for one time, and then as per the data input through big data sharing, the express can be collected at each station; on one hand, this has largely reinforced the interactivity and improved students' overall online shopping experience, but also recognized the gender, age, race, and height of user groups, and even recognize the emotions when users see the commodities, and all of these numerous subtle big data cannot be completed when manually delivering the express. Moreover, when being compared with the application of traditional database, big data analysis has big data volume, various types, low value density, fast handling speed and other characteristics. Logistics industry is related to various big enterprises, companies, merchants, families and individuals, and the data volume involved thereby is big with certain value. However, big data can precisely provide fast and high-efficiently handle these data, and obtain correct and usable information, and make Cainiao Yizhan know more about its own user group and better promote service under the support of these key data. Besides, it can also be applied in express companies, expanded to the entire logistics industry and make the entire logistics industry meet people's demands.

By virtue of the powerful function of internet, it uses modernized information, sensation and other technologies, to realize logistics automation[4], visualization, controllability, intelligence, informatization, and networking, improve the resource utilization rate and innovate the service mode; build the socialized common distribution system oriented to production enterprises, circulation enterprises and consumers; so as to realize the valid control of order placing, goods warehouse, distribution and other procedures, and then decrease the cost, improve profits and optimize service.

Intelligent warehouse management system (IWMS) can support several warehouse business demands and various inventory demands, and can also realize the random storage of materials, improve the warehouse space utilization rate; conduct the cold and hot degree analysis of warehouse storage locations, realize the adjustment of goods shelf position and automatically recommend goods shelf collection. Besides, through analyzing historical operation data, it is applicable to

dig out the correlation of materials, formulate corresponding warehouse strategies, and improve ex-warehouse efficiency[5]. Under the challenge of various SKU varieties of the base and the high in-warehouse and ex-warehouse frequency, IWMS can monitor the entire process of the warehouse, and cooperate with RCS to mobilize several robots to realize the overall automatic logistics of the entire factory.

IV. INFLUENCE OF INTERNET DEVELOPMENT ON SMART LOGISTICS

The development of the internet of things and the expansion of online shopping have caused the constantly developed logistics system, and brought the constant improvement of logistics system, to meet people's demands, but along with people's pursuit for fast-paced life, the requirements for logistics system are increasingly high. Thus, the logistics system service has become the key points emphasized by people [6].

By virtue of the strong power of the internet of things, it uses modernized information and sensing and other technologies, to conduct information exchange and communication, realize logistics automation, visualization, controllability, intelligence, informatization, and networking, improve the resource utilization rate and innovate the service mode; build the socialized common distribution system oriented to production enterprises, circulation enterprises and consumers; so as to realize the valid control of goods warehouse, distribution and other procedures, and then decrease the cost, improve profits and optimize service [7]. The Intelligent unloading system can be seen from Fig. 1.

When the express delivery vehicle arrives at the logistics center, people should stand inside the carriage, and through the height adjustable transport unit, working personnel will place the express goods on the transport device, and through the transport device, the express goods will be internally sent for warehouse, and realize the first step of transportation process.

When the express goods enters from the external side of the warehouse, it will pass through several scanning guns without dead corners, and through extracting the bar codes on the express goods, it can obtain the relevant information about the client (name, address and Tel., etc.), and the relevant information can be transmitted to the computer internet big data and then connected to the cloud data through SCM.

Through the idle feedback of goods shelf in combination with the regional division optimization, computer can control the bypass flow device and mechanical arm, and place the express goods at the most suitable idle place, and give feedbacks to the computer considering the position information of the express, and send the information to clients.

Monitor idle goods shelf in real time, and give feedbacks to the big data considering the idle information.

The intelligent warehouse management system can support various warehouse business demands and various inventory demands, and can realize the random storage of materials, and improve the warehouse space utilization rate; conduct the cold

and hot degree analysis of warehouse storage location, and adjust the position of goods shelf in real time [8], and automatically recommend for goods shelf collection. Besides, through analyzing the historical operation data, it is applicable

to dig out the correlation of materials, formulate corresponding warehouse strategies, reach to the warehouse optimization, and facilitate the follow-up work [9].

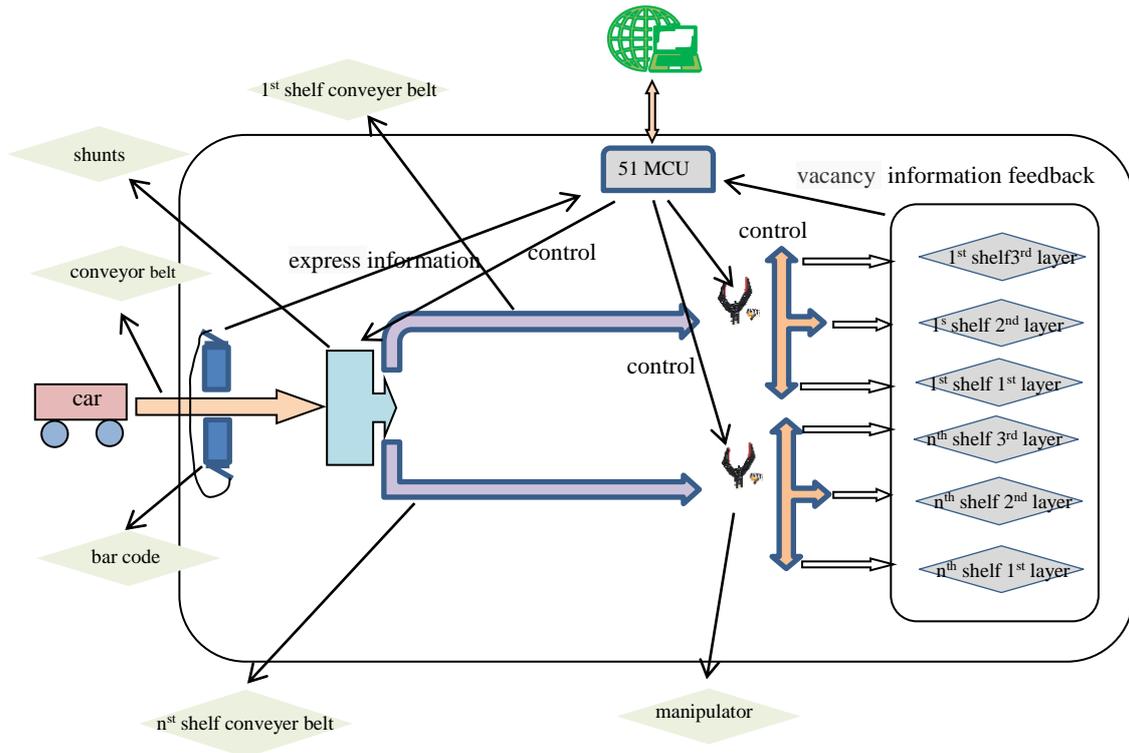


Fig. 1. Intelligent unloading diagram

The entire intelligent warehouse system has five steps, and all of them possess feedback system, so there is good security assurance during the operation process, and during the transmission process, the system can automatically adjust the speed of the transmission device as per the working status of robot arm, and it has reached to the fast and high-efficient working mode, and can realize the intelligence of the entire warehouse process [10].

Through the logistics information platform and logistics management platform, the existing smart logistics system, equipment, platform, and system can comprehensively improve the industrial competition and attraction as per shrewd and systematic post-Olympic era logistics system utilization mode and concept. "Smart logistics" extend towards "smart logistics", and through information technology, it can realize the integrated operation of business flow, logistics, information flow and find flow, combine the market, industry, enterprises and individuals, and realize smart management and smart life.

V. CONCLUSIONS

The state pays particular attentions to the development of express industry, and as an important component of modernized comprehensive traffic transportation system, it has accelerates the development of China, reinforces the national strength and improves the development of science and technology as well as the living standard of people through express industry and logistics system; smart logistics are constantly perfected, and can meet people's increasing demands for a good life as well as the conflicts with unbalance and insufficient development. Meanwhile, the transformation development of express is also a rigid demand.

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