

The Application and Innovation of Internet of Things Technology in Logistics

Yi Zhang

Tianjin University of Science & Technology, Tianjing 300457, China.

Abstract

The Internet of things is usually a field that combines computer technology and Internet technology to make everything interconnected. Computer Internet of things technology also plays an important role in the field of logistics. This paper studies the application of Internet of things in logistics and some problems faced by the current technology.

Keywords

Internet of Things; Logistics; Intelligence.

1. Introduction

With the continuous development of computer technology and the rapid updating and iteration of communication technology, Internet technology has been developing rapidly since its birth in 1969, which has gradually affected all aspects of human life. But with the development of technology, the demand for "Internet" is also increasing. From the beginning of people to people, things, and things, until the effect of all things interconnection is realized, it is inevitable to twin the physical world to the digital world. A technological revolution of realizing the interconnection of all things makes the Internet of things technology emerge. Nowadays, Internet of things technology has become one of the hottest technologies in recent years, which has played an active role in promoting the development of various industries, and has been favored by people, especially in the logistics field, it plays a key role and value. Internet of things technology has intelligent transportation, automatic storage The new logistics business system, which is composed of dynamic distribution and information control, has been formed. Promote the logistics field to the direction of intelligent, visual and efficient development. Specifically, it is mainly in four aspects.

First, the traceability of products is realized, which makes the products clear in the whole logistics link. Because traceability can be traced, the responsibilities of each node in the whole process can be clarified. Compared with traditional logistics, the quality and safety of products are guaranteed better, especially for food, medicine and other products related to human health and safety, Its importance is self-evident.

Second, let the product be visualized in the whole logistics process. By combining the comprehensive sensing technology and the sensing technology, the goods can be managed and controlled on the basis of the perception of the status of the goods in transit. Realize the identification, positioning, tracking and state perception of the transport vehicles and goods. Realize the transparency and visualization of the goods management in transit, and ensure the quality and safety of the goods transportation. Based on GPS technology, the whole process of tracking and positioning of cargo transport vehicles can be carried out. The emergency rescue of vehicles in emergency situation is realized. It can also dispatch vehicles and provide the alarm function of vehicles, which makes the goods safer in the process of transportation.

Third, realize the intelligent logistics distribution of enterprises. The Internet of things technology helps the logistics field establish a fully automatic intelligent distribution center. Through the advanced technologies of sensor, RFID, light, sound, electricity, machine, 5g,

mobile computing, etc., logistics can be intelligent control and automatic operation. Through the establishment of a systematic network, the linkage between manufacturing production and logistics can be realized, and the business flow, logistics, information flow can be realized Comprehensive coordination of capital flow.

Fourth, the closed-loop of supply chain of production transportation receiving production is realized. Nowadays, the development competition of all walks of life is extremely fierce. People have increased the personalized customization demand for products. Through Internet of things technology and big data analysis, we can timely grasp customer demand, accurately make customer forecast and product push, and create a smart supply chain system. Of course, intelligent logistics and smart supply chain need logistics support network system. In addition, the construction of logistics network public information platform based on intelligent distribution, the network application of intelligent hand-held terminal products in logistics operation, are also the application mode of Internet of things in logistics industry promoted by many regions.

2. Problems encountered in the field of logistics of Internet of things

2.1. Two point one Difficult to form a unified industry standard

At present, the business of logistics industry is increasing rapidly, especially after the rise of e-commerce, the increase of Internet of things technology undoubtedly makes the logistics industry develop better, but it also brings new challenges. Internet of things is a large network with multiple devices, multiple networks and multiple applications. Its main feature is interconnection and integration. This requires all relevant interfaces and communication protocols to have unified standards to guide. This part has become the biggest obstacle to the development of Internet of things and will inevitably affect the development of logistics industry. Therefore, the new development stage requires the regulatory authorities to accelerate the study of new rules for high-quality and efficient flow of data in e-commerce and logistics enterprises. New business forms and new business models require the change of government regulatory rules, and it is urgent to form authoritative, unified and accepted industry standards, and to form an open, inclusive, shared and fair business environment.

2.2. Two point two The existing capacity is difficult to meet the development needs of intelligent logistics

With the development of Internet of things in logistics, the problems that the existing logistics system, structure, capability and the rapid change demand are not suitable are still outstanding. The logistics resources such as transportation, storage, distribution, express delivery and information are divided, and the service ability is weak. Facing the e-commerce demand of different scale, business form and region and the fast changing business model, traditional express logistics is difficult to meet both quantity and quality. Especially in the face of the explosive growth of online retail in recent years, the bottleneck problem is highlighted. Some important and special areas of express logistics, such as fresh cold chain express logistics, medical express logistics, etc. are still in the primary stage. The storage outlets suitable for urban distribution, distribution in the city, e-commerce and fresh and cold chain are seriously inadequate. The express delivery logistics serving rural e-commerce is weak, and the coverage rate of small cities, towns and rural areas is low. The logistics problems such as the first kilometer, the last kilometer and the longest distance are urgently solved.

2.3. Two point three Security problems of Internet of things technology need to be solved

Internet of things technology is based on computer technology, Internet technology and communication technology and other disciplines, which has a very high openness. This

openness has its positive side, which can help the Internet of things to build and develop rapidly. But it also causes great network security risks. Virus implantation, system vulnerability utilization, and even apt attack are likely to take Internet of things as the attack entrance, which will cause user privacy information leakage, logistics system paralysis, or more serious problems. Therefore, the network security of Internet of things technology must be paid enough attention to as traditional network.

3. The development and innovation of Internet of things technology in Logistics

3.1. Three point one Unmanned logistics will become an inevitable trend

Unmanned logistics is one of the typical representatives of logistics industry to automation and intelligence development. It is a major trend of logistics development in the future. At present, various manufacturers have been actively pouring into the logistics delivery market, such as Ford, JD, Toyota, Ali, Baidu, Shunfeng and other companies. Unmanned logistics has its own advantages, such as: unmanned logistics can be sent all day, wind and rain, more efficient and resource saving than traditional logistics; Unmanned logistics will make logistics of back-end supply chain change, and make less mistakes, which will help to reduce commodity cost and reduce consumer cost. Especially in the post epidemic era, this new delivery mode also provides people with health and safety. Although the advantages of unmanned logistics are obvious, the development and improvement of the logistics needs to be promoted by the government and enterprises, making rules, perfecting various related technologies and promoting the development of unmanned logistics.

3.2. Three point two Last mile delivery innovation

In the whole logistics process, the last kilometer delivery is the most difficult and the most expensive module. The express vehicles are difficult to enter the community, the delivery time is contradictory with the customer, and the moral quality of the dispatcher is different, etc. are the problems in the last kilometer delivery process. The future express business is likely to be composed of autopilot, express robot and UAV. They can cooperate with each other through the unified scheduling of the Internet of things platform. The self driving vehicle can cross the street to deliver the goods to the designated community, and then send the express robot and UAV to the customer's hands to solve the problem of the last mile delivery efficiently.

3.3. Three point three Innovation of Internet of things technology

The Internet of things technology in the logistics field mainly relies on three technologies as the support, which are comprehensive perception technology, only processing technology and reliable transmission technology. At present, their development is still in the primary stage, and its development space is huge. For example, the Internet of things technology is more used in the process of logistics distribution, in the realization of visual management, in the construction of the whole logistics information management platform, the lack of power, which requires the research and innovation of logistics information network technology. In fact, in the field of Internet of things, the application of sensor technology is not difficult, and it is very wide. The real difficulty lies in how to build an Internet to exchange and communicate information between all goods, and realize the supervision and control of the whole process from production to transportation to customer reception in the logistics field, and coordinate and dispatch, To ensure the development of logistics field with high efficiency and low cost.

4. Epilogue

The development and application of Internet of things technology has greatly promoted the development of logistics, made it more intelligent and efficient, and there has never been a prosperous scene. However, whether it is the formulation of industry rules or the development and perfection of Internet of things technology, there is still a great development space, and various problems and challenges facing are urgently needed to be solved. Therefore, the development of Internet of things technology in the field of logistics is still a long way away, but also firmly believe that the change brought by the Internet of things will soon come. With the help of the technology and concept of Internet of things, Relying on the support of policy, it will usher in a new era of intelligent logistics.

References

- [1] Chuningzhi. Application and innovation analysis of computer Internet of things technology in logistics field [j]. China logistics and procurement, 2019 (11): 72.
- [2] Xushuying. Innovative application of Internet of things technology in logistics [j]. Electronic technology and software engineering, 2018 (21): 4.
- [3] Zhu Geng. Research on terminal distribution mode based on Internet of things technology [D]. Wuhan University of technology.