Research on Application of Internet of Things Technology on Intelligent Logistics Management

Yanping Zhu

Nanhai Information Technology School, Foshan, Guangdong, 528225, China

Keywords: Intelligent Logistics Management, IoT, Application Study

Abstract: The rapid development of network is a new trend in the development of science and technology in the new era. As a logistics industry closely related to people's lives, it has continued to grow and become a sunrise industry under the blessing of the Internet, making a huge contribution to the national economy. This paper systematically expounds the connotation of intelligent logistics in the Internet of Things environment, analyzes the problems existing in the development of smart logistics from the aspects of system mechanism, information security, capital investment and talent supply, and the innovation of intellectual property network to the innovation of intelligent logistics.

1. Introduction

Since the 21st century, the world's scientific and technological changes have been deepening, and new technologies based on the Internet, cloud computing, big data, and artificial intelligence have developed rapidly, driving a large number of industries to transform and upgrade, and also injecting into many emerging industries. The new vitality, in which the transformation and development of the logistics industry is particularly rapid, relying on the Internet of Things technology (that is, the Internet connected by objects), the operational efficiency of the modern logistics industry continues to rise, the process is gradually transparent, and the deeper changes in the logistics industry are quietly taking place.

2. Understanding of the Connotation of Intelligent Logistics Based on Internet of Things

As an important part of the new generation of information technology, the Internet of Things is also an important development process in the era of information technology. The Internet of Things is a network based on the Internet as a basis for development, relying on Internet technology for re-creation and extension. Through the exchange and communication of information between objects and objects, supplemented by artificial intelligence technology, cloud computing, communication sensing technology and data processing technology, the object and object are widely interoperable and integrated. As a new engine to promote the rapid development of the world, the Internet of Things is gradually expanding and extending its application scope and field. The application of the Internet of Things technology in the logistics industry has brought the logistics industry to a new and transformative development, from the traditional low-end industry relying on manpower to the modern intelligent industry relying on technology. The development of smart logistics is to use the Internet of Things as the basis, exchange information between the network world represented by the Internet and the real world, and re-integrate, calculate, analyze, filter and store a large number of physical data information of the logistics industry. In order to improve the efficiency of the logistics industry, the cost is further controlled. With the support of the Internet of Things and cloud computing, Smart Logistics has outstanding advantages in logistics data tracking and analysis, the selection of the shortest optimal line, and the analysis and distribution of storage capacity, ultimately achieving efficient and intelligent logistics and quality customer experience. To achieve a win-win situation for logistics companies, customers and society.

  DOI: 10.25236/csam.2019.009

3. Problems in developing smart logistics under the Internet of Things environment

The continuous development of the Internet of Things technology has promoted the continuous expansion of the industry scale of the logistics industry, contributing to the development of the market economy, and at the same time making the quality and level of people's lives constantly improved. However, opportunities and risks coexist, and there are many problems that IOT have to face in China.

China's development and application of Internet of Things technology is in the exploratory stage, and there are many problems in the logistics industry itself. The development of intelligent logistics using IoT technology faces many technical problems. In addition, the system mechanism is imperfect, and there is no uniform standard in the industry. Standards have led to uneven growth rates and lack of quality of development.

China has a large land area and a large population. The initial investment in Internet of Things technology is even larger than other countries. In the early stage, a large amount of investment has to face the problem of slow return of funds for logistics enterprises with relatively low income, and because of the continuous technological upgrading in the development of smart logistics, enterprises have to continuously increase capital investment. Intangible adds to the burden of enterprises, so that the development of smart logistics hides the crisis. Therefore, the excessive dependence on funds is the problem that the logistics industry has to face in the development of smart logistics.

With the advent of the information age, the connection between citizens' lives and the Internet has become increasingly deep. The protection of customer personal information security during the data transmission and exchange process under the Internet of Things is also an extremely sensitive issue. As the logistics industry is in the development stage, the protection awareness of customer information security in the logistics industry is not high enough, which makes the leakage of customer personal information possible, and also makes the customer question the security and credibility of the Internet of Things technology. The protection of customer privacy and security is another hidden danger that restricts the development of smart logistics.

The uneven quality of logistics practitioners is also one of the problems that restrict the development of smart logistics. The demand for logistics in the society is huge, and the development speed of logistics enterprises is too fast. The number of practitioners is large, and there is a lack of unified training for employees. The customer satisfaction of the logistics industry often fluctuates. News reports that the violations of logistics personnel often occur. The selection and cultivation of personnel is also a limitation of the development of smart logistics today. Combining intelligent development with humanized management mode can guarantee the long-term development of smart logistics development.

4. China's smart logistics development model

In the development of smart logistics, the government's main responsibility is to create an environment, guide all-round, and foster the development of the entire industry. First, the government should plan and implement policy support and financial support simultaneously, and plan, design, develop, construct, and operate public service content and communication facilities in smart logistics as urban infrastructure, and create logistics information and interconnection. Environment, integrate smart logistics resources, form the carrier of smart logistics development; Second, cultivate and support a group of smart logistics enterprises with strong competitiveness at home and abroad; Third, accelerate the division of labor of intelligent enterprises, and form a smart logistics enterprise Development-oriented, smart logistics industry system coordinated by other logistics enterprises and related smart industries, and strive to construct a smart logistics service system that is socialized, professional, intelligent and large-scale.

First, the government uses direct bidding or strategic guidance to promote the research and development and promotion of smart logistics technology. R&D units and their professional and technical personnel carry out research and development and follow-up, and apply the results to the

logistics industry through market-oriented operations; The government and the R&D department and production enterprises have a clear division of labor, mutual cooperation and mutual coordination to promote the research and development and promotion of smart logistics technology. Third, the government focuses on standard construction, and summarizes the commonalities for logistics operations in different industries and different fields. Characteristics, drawing on foreign advanced experience, combined with China's national conditions, formulating logistics standards and information standards suiTable for China's use. Intelligent logistics system construction has large investment, long payback period, high risk, and significant social benefits. No unit has the ability or willingness to complete it alone. This is a complex system with a public nature. Under the macro guidance and unified coordination of the government, we need to innovate the system, mechanism and operation mode, fully mobilize the enthusiasm of all parties, and concentrate the effective resources of the society to accomplish together.

According to the industrial base and resource endowment, according to the development stage and characteristics of different fields, in accordance with the law of industrial development, the development of smart logistics will be promoted through differentiated strategies. For key areas such as e-commerce logistics, cold chain logistics, pharmaceutical food logistics, dangerous goods logistics, tobacco logistics, port and container logistics, and important infrastructures such as transportation and warehousing, we will promote the integration and application of IoT technology around logistics management processes. A group of typical application demonstration projects with outstanding effects, strong driving force and high correlation. It is necessary to build a smart logistics industry cluster area and information platform, formulate industry standards, create a good ecological environment for smart logistics development, and accelerate the development of high-end, large-scale, clustered, and coordinated development of the smart logistics industry. It is necessary to use the technical means of smart logistics to strengthen the interoperability of logistics information with other regions, promote cross-regional industrial linkage development and economic cooperation; the wisdom of government, industry, scientific research institutions and enterprises in different fields such as logistics, finance, manufacturing and commerce The logistics industry alliance or entity will jointly promote the development of smart logistics across industries.

Enterprise-led is to take the enterprise as the main body, realize data intelligence, network synergy, and decision-making wisdom. Data intelligence is the use of intelligent devices by companies, such as sensors, RFID tags, GPS and other devices to build an advanced system that collects information in a timely manner and feeds information back to the organization in a timely manner. Network synergy means that enterprises need to share information with partners. These partners include information sharing between internal and external departments, between external suppliers, and between customers. Intelligent decision-making refers to the use of intelligent systems in the logistics chain to measure various constraints and selection conditions based on the collected data, to provide options, so that decision makers can choose various action processes, or automatically make the system through learning. Decide.

Standardization can guarantee the coordination of logistics technology development, modernize logistics management, reduce logistics costs, improve logistics development level, eliminate organizational and information barriers, and lead the logistics industry to the direction of smart logistics. First, strengthen overall coordination, rely on cross-regional, cross-sectoral, and cross-industry standardization and coordination mechanisms, coordinate and promote the development of smart logistics standards system and the formulation of various professional standards, promote the formulation and improvement of relevant laws and regulations, supporting regulations and systems, and gradually build A scientific, systematic, advanced and open logistics standard system framework; Second, accelerate the research and development of key application standards such as coding common standards such as coding, interface, data and information security, and key technical standards and sensing technologies such as RFID; The information platform standardization is the focus. On the basis of the intelligent logistics collaboration platform and data center construction, the development and promotion of smart logistics technical standards, information standards, data standards and business collaboration standards are strengthened. Fourth,

the enterprise standardization needs are oriented to encourage enterprises. Purchase or independently develop a computer information management system that is compatible with its own business. The system can effectively interface with customer companies, partners, logistics parks, ports, highways, railways, civil aviation information and public information platforms to realize data exchange and information sharing.

The development of smart logistics will eventually introduce market mechanism. Under the dual role of government “thrust“ and market signal “gravitational force“, the endogenous driving force of smart logistics development will be enhanced, and more social capital will be invested in the construction of smart logistics; Make full use of the media role of the information market and technology market, improve the supporting service institutions, and make the market truly become a place for information and technology transactions and diffusion between the supply and demand sides; Build an open market-oriented smart logistics promotion service system and develop diversification The main body of smart logistics services, build an application platform for smart logistics enterprises, and guide enterprises to improve product structure and technology application structure according to the market demand of smart logistics.

5. Conclusion

Through the promotion, guidance and promotion of the government, the continuous exploration and practice of the industry and the theoretical community, the promotion of the industry level and the promotion and application of the market level, the intelligent logistics based on the Internet of Things technology will have more innovative development models until the final formation can be replicated. Mature development model.

References

[1] Wang Jixiang. The development of the Internet of Things promotes the transformation of China's smart logistics [J]. Logistics Technology and Applications (Cargo Vehicles), 2010, (3): 80 - 83.

[2] Liu Zhishuo. Research on the theory and method of intelligent logistics system [D]. Ph.D. Thesis, Beijing Jiaotong University, 2004, 10.

[3] Zhang Junjie. Research on the development status, influencing factors and countermeasures of intelligent logistics [J]. Logistics Technology: Equipment Edition, 2010, (34): 62 - 64.

[4] Zhang Hejie. Research on the basic connotation and implementation framework of smart logistics [J]. Modernization of the mall, 2011, (21): 30 - 32.

[5] Wang Ming. Wisdom logistics focuses on wisdom [J]. Logistics era, 2011, (11): 13- 13.