Research on the Application of Smart Logistics in Trunk Transportation

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Abstract

Vigorously promoting intelligent logistics has become the development trend of logistics industry. For specific logistics links, the academia has analyzed the application of intelligent logistics in warehousing and terminal distribution, but there is a lack of research on the application of intelligent logistics in trunk transportation. At the same time, the paper points out the status quo of the intelligent logistics network and its application, and points out the problems in the development and application of the intelligent logistics network In order to provide guidance and suggestions for logistics enterprises to develop intelligent logistics of trunk transportation links.

Keywords

intelligent logistics; trunk transportation; status quo; development trend.

1. Introduction

With the proposal of "made in China 2025", the logistics industry, as the driving force of China's economic growth, is facing the challenge of smart logistics to traditional logistics [1]. In traditional logistics industry, warehousing, trunk transportation, terminal distribution and other links rely on manual operation, which has the problems of high labor cost and low efficiency. By combining the new generation of Internet, Internet of things and other emerging technologies, smart logistics realizes the automation, intelligence and informatization of all logistics links, which can not only effectively solve the problems of high cost and low efficiency of traditional logistics, but also further improve the operation performance of the logistics industry and promote the transformation and upgrading of traditional logistics to intelligent logistics [2].

So far, smart logistics is widely used in all aspects of logistics operations. In addition to smart logistics technology, it still includes smart logistics mode and smart logistics system. Since the concept of intelligent logistics was put forward, the academia has carried out a variety of research on the technology, mode and system of intelligent logistics, and some scholars have conducted research and analysis on specific logistics links, such as terminal distribution link [3].

As the main link in the logistics link, the intelligent degree of the link directly affects the efficiency of the whole logistics link, but there are few studies on the trunk transportation link. Therefore, this paper analyzes the status quo and development prospects of the intelligent logistics in the trunk transportation link, hoping to provide some guidance for the logistics enterprises to development the intelligent logistics in the trunk transportation link.

2. Status Quo of Intelligent Logistics in Trunk Transportation

2.1. Less Types of Intelligent Logistics Technology

As the main product of intelligent logistics, the application of intelligent logistics technology is the main way to solve the problem of high cost and low efficiency in traditional logistics industry, so many logistics enterprises have joined the ranks of technology research and development. So far, a lot of intelligent logistics technologies have been developed in logistics warehousing and terminal distribution, such as the automatic sorting robot, stowage technology, barcode and automatic identification technology in warehousing link, and UAV, intelligent express cabinet, intelligent wearable equipment in the terminal distribution link. Moreover, most of these technologies have been widely used in enterprises. However, compared with the types of technologies in warehousing and terminal distribution, there are fewer types of intelligent logistics technologies in trunk transportation. At present, Intelligent line planning system, intelligent transportation capacity control platform and so on have entered the operation stage.

The reason why there are fewer types of technologies may be that logistics enterprises pay more attention to the upgrading of warehousing or terminal distribution technology, thus delaying the technical upgrading of trunk transportation. For example, influential and representative intelligent logistics enterprises such as SF, Yunda and DEPPON give priority to the application of intelligent logistics technology in warehousing or terminal distribution [4-6].

2.2. Low Application of Smart Logistics

Smart logistics technology, smart logistics mode and smart logistics system have been gradually applied in the logistics industry. The application degree of intelligent logistics affects the degree of automation, informatization and intelligence of enterprises, and then affects the development of intelligent logistics in the whole industry. At present, the intelligent logistics technology, mode and system of warehousing and terminal distribution have been applied to a higher degree, such as digital warehousing in warehousing and UAV distribution mode in terminal distribution link [5]. However, compared with the warehousing link and terminal distribution link, the application degree of intelligent logistics in trunk transportation link is relatively low. At present, only a few large-scale intelligent logistics enterprises, such as Yunda and DEPPON, have applied the intelligent route planning system in this link.

The reason for the low application degree of intelligent logistics is not only that enterprises give priority to the upgrading of intelligent logistics technology in warehousing and terminal distribution links, but also due to the high difficulty in the research and development of intelligent logistics technology in the trunk transportation link, and the complex construction of trunk transportation network, the application degree of intelligent logistics in subsequent trunk transportation links needs to be improved.

2.3. Faultiness of Construction of Network System

Constructing a perfect intelligent logistics network system is an important step forward from traditional logistics to intelligent logistics. A perfect intelligent logistics network system can reduce costs and improve efficiency from two aspects of human and material resources, thus greatly improving the operational performance of logistics links, and helping enterprises to transform and upgrade to intelligent logistics. At present, some enterprises have built a relatively perfect intelligent logistics network system for warehousing, trunk transportation and terminal distribution. For example, as a leading domestic intelligent logistics enterprise, SF has built a network system of "Skynet plus ground network and plus information network" which is suitable for the three links of warehousing, trunk transportation and terminal distribution [5]. However, in addition to large-scale intelligent logistics enterprises, there are

few enterprises that can build intelligent logistics network system suitable for the whole logistics link.

As the main link of logistics, the intelligent degree of trunk transportation directly affects the network system construction of the whole logistics link. So far, because most enterprises give priority to the development of intelligent logistics in warehousing and terminal distribution, the intelligent degree of trunk transportation link is relatively low, and the network system of this link needs to be improved compared with warehousing and trunk transportation.

3. Development Trend of Intelligent Logistics in Trunk Transportation

3.1. Promote the Research on Smart Logistics Technology

The research and development of intelligent logistics technology in trunk transportation links takes a long time and costs much, which makes it difficult to research and develop such technologies as automatic driving trucks and intelligent network planning system. Therefore, logistics enterprises usually give priority to warehousing and terminal distribution links when developing smart logistics technology. The transformation and upgrading process of traditional logistics enterprises to intelligent logistics includes the transformation and upgrading of each logistics link, rather than some of them. Therefore, promoting the research and development of intelligent logistics technology in trunk transportation is an indispensable link for enterprises to promote the development of intelligent logistics, and it is also the development trend of intelligent logistics in this link.

Logistics enterprises can promote the process of intelligent logistics research and development in trunk transportation, absorbing R & D talents of smart logistics technology, establishing intelligent logistics technology R & D team of trunk transportation link, increasing R & D capital investment of trunk transportation link, and cooperating with enterprises that have successfully developed smart logistics technology in this link to help enterprises reduce costs and increase efficiency, improve operation efficiency, then promote the development process of intelligent logistics technology in trunk transportation link and complete the transformation and upgrading of traditional logistics to intelligent logistics.

3.2. Improve the Level of Intelligence

At present, the development of intelligent logistics in trunk transportation is relatively slower than that in warehousing and terminal distribution, so its degree of intelligence is lower. The intelligent logistics technology which has entered the operation stage includes intelligent route planning system, while only a few enterprises' automatic driving truck technology has entered the trial operation stage. The difficulty of technology research and development and the lack of technology types lead to the low level of intelligence in this link. In the whole logistics link, the waste of transportation resources and long transportation time in the trunk transportation link are not conducive to the performance improvement of enterprises, but also bring negative experience to customers. Therefore, it is the development trend of intelligent logistics to enhance the intelligent degree of trunk transportation link.

Logistics enterprises can speed up the R & D Progress of smart logistics technology, increase the application scope of smart logistics technology in this link, and cooperate with the leading intelligent logistics enterprises in the industry to enhance the intelligence degree of trunk transportation links of enterprises, help enterprises make full use of transportation resources and reduce transportation time, so as to promote the transformation of enterprises into intelligent logistics enterprises.

3.3. Constructing a Perfect Intelligent Logistics Network System

The perfect intelligent logistics network system is an important part of the transformation and upgrading of enterprises to intelligent logistics. The construction of a perfect network system needs to be based on the enterprise's logistics intelligence, including warehousing, trunk transportation and terminal distribution. At present, only a few large-scale intelligent logistics enterprises, such as express leading enterprise SF, have constructed the "three in one" system, in which the "three in one" system refers to "sky net", "ground network" and "information network", which is a network system integrating intelligent logistics technology and intelligent logistics mode.

Logistics enterprises can continue to promote the research and development of smart logistics technology, promote the application of smart logistics technology and mode, so as to constructing a perfect intelligent logistics system, help enterprises realize the transformation and upgrading of smart logistics, and further develop into a leading intelligent logistics enterprise in the industry.

4. Conclusion

The transformation and upgrading of traditional logistics to intelligent logistics has become the normal of sustainable development of logistics industry [7]. So far, more and more enterprises have applied intelligent logistics mode, technology and system to all aspects of logistics, and enterprises have achieved remarkable results in reducing cost and increasing efficiency, so the degree of automation, informatization and intelligence of enterprises has been effectively improved. So far, the application of intelligent logistics in warehousing and terminal distribution is more extensive, and the academia has analyzed the application of intelligent logistics in this link. However, the application of intelligent logistics needs to be further explored for the trunk transportation link. Therefore, this paper analyzes the current situation of smart logistics in trunk transportation, and puts forward some suggestions to promote the application of smart logistics in trunk transportation, such as promoting the research and development of smart logistics technology, and improving the degree of intelligence in this link, so as to provide certain reference and suggestions for logistics enterprises to develop smart logistics in trunk transportation.

Acknowledgements

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