

Research on The Necessity of Building Intelligent Logistics Laboratory in Digital Times

Qian Zeng^{1, *}

¹ School of management science and Engineering, Chongqing Technology and Business University, Chongqing, 400067, China

* Corresponding author: Zeng Qian (Email: zengqian320@foxmail.com)

Abstract: With the accelerated innovation of big data, internet of things, cloud computing, artificial intelligence, block chain, etc., they increasingly integrated into all fields and the whole process of economic and social development. The digital economy has developed rapidly and has become a key force to reshape the global economic structure and change the global competition pattern. As the core factor to promote the development of digital economy, big data and modern information technology have attracted more and more attention by colleges and universities. As the basis for teaching activities, laboratory construction is indispensable. Taking Chongqing Technology and Business University as an example, this paper analyzes the necessity of building an intelligent logistics laboratory, constructs the content system of the laboratory and provides a reference for the construction of intelligent logistics laboratories in colleges and universities.

Keywords: Digital time, Big data, Intelligent logistics laboratory.

1. Introduction

In recent years, the big data, cloud computing, artificial intelligence, block chain have accelerated innovation and become increasingly integrated into all fields of economic and social development. The digital economy is developing at an unprecedented speed and becoming a key force in reorganizing global resources, reshaping the global economic structure and changing the global competitive pattern. As the core factor to promote the development of the digital economy, big data and modern information technology are more and more concerned by the state, enterprises and universities. Relevant talents have also become the new favorite of the human resources market. Thus, many universities have opened big data or other related majors.

University laboratory is an important platform for experimental teaching, scientific research and innovation [1]. Ministry of education of China clearly proposed that intelligent classroom, intelligent laboratory and intelligent campus construction should be carried out [2]. Wang pointed out that laboratory construction is an effective support for the construction of an excellent university [3]. Li believes that the laboratory is in a strategic position in the national planning, as a platform for the national implementation of science and technology strategy, exploration of frontier theoretical research, cultivation of major innovation projects [4]. Thus, this paper takes the logistics management major of Chongqing Technology and Business University (CTBU) as an example to analyze the necessity and the path of building an intelligent logistics laboratory.

2. Necessity of Building Intelligent Logistics Laboratory

2.1. Needs of Regional Economic Development

Chongqing is an important industrial base in Western China, with developed automobile, motorcycle, chemical, pharmaceutical and textile industries. At the same time,

Chongqing is the largest trade port along the Yangtze River. The tertiary industry has developed rapidly and reached 42.1% of the city's GDP. Chongqing also has vast rural areas, with great potential for the development of agriculture, forestry and aquaculture. The good development of industry, agriculture and the tertiary industry has brought a huge market for the logistics industry.

The intelligent logistics laboratory can be constructed based on the advantageous of Chongqing to build a comprehensive public training practice base with integrating Internet of things (IoT), e-commerce and other disciplines. It is not only of great significance to the training practice base of the logistics industry, but also will play a demonstration and to the other colleges and universities.

2.2. Needs of Diversified Talents in Logistics Industry

The development of artificial intelligence, big data technology, IoT, 5G, AVR virtual simulation, block chain technology and other new technologies is bringing a new scientific and technological revolution. The logistics industry has also undergone technological application innovation, and there is a strong demand for new-type diversified logistics talents.

Currently, all walks of life are embracing big data. However, the gap of big data talents in enterprises has reached 1.5 million. Therefore, guided by the development of the big data industry and combined with application scenarios, professional standards and application skills of the enterprise should be taken as the talent training objectives. Moreover, the knowledge, skills, quality and other elements that the graduates should have are jointly analyzed for the main employment positions, and high-quality education resources are introduced. Colleges and universities should develop a batch of teaching standards and teaching resources suitable for international talent training, form a "big data +" training mode. In addition, a multi-level experimental system should be built.

2.3. The Need to Improve the Quality of Talent Training

The logistics management students are required to master the professional knowledge and skills in the field of modern logistics and supply chain management, especially in the fields of international logistics and third-party logistics, intelligent logistics and urban distribution. According to the training plan, guided by the market and industry demand, colleges and universities should build an experimental system with industry characteristics such as big data, internet, supply chain finance, logistics and transportation. It is necessary to design innovative and interesting practical experiments by adopting the teaching mode of blended teaching and practical operation. The practice training needs to integrate the specific application of big data in the industry and the specific methods to solve the corresponding problems.

2.4. The Need of Logistics Management Professional Development

The modern intelligent logistics management laboratory of CTBU was founded in 2007 and has been in a leading position in the logistics laboratory of Chongqing universities. However, the logistics industry is constantly innovating with the evolution of science and technology and business models. The automatic operation and intelligent management brought by new technologies are gradually replacing the traditional manual operation environment. Among them, the innovation brought by technology is regarded as the internal driving force for customer demand and business innovation.

2.5. The Need to Build A Professional Group Resource

The construction of the professional group takes logistics big data as the core of the group, plays an enabling role in the professional group, and realizes the maximum sharing of teaching resources, teacher team resources, hardware facilities resources, training practice resources, data resources and scientific research resources among multiple disciplines. Mutual benefit, mutual drive and coordinated development among specialties. The laboratory can combine the original specialty with the advantage specialty. It enables the specialty group to be closer to the industrial characteristics of rapid technological development, while continuously strengthening the characteristic and the advantage specialty.

Therefore, it is necessary for the logistics laboratory to make use of big data and other technologies to transform and upgrade the laboratory into a platform for students and teachers. As a result, students can master the latest logic and principles of logistics management during the experiment.

3. Construction of Intelligent Logistics Laboratory

3.1. Logistics Big Data Analysis and Application Center

The laboratory should integrate manufacturing logistics, transportation logistics, warehousing logistics and sales logistics, build a unified logistics management platform, and form a logistics big data center.

For the manufacturing logistics, the logistics system based on the IoT can identify and track the whole process of raw materials, semi-finished products and finished products. It can automatically form detailed replenishment information to

promote the continuous connection of the entire industrial chain.

For the transportation logistics, intelligent dispatching is carried out. By affixing EPC labels to warehouses, vehicles, containers and goods, and installing receiving and forwarding devices at some checkpoints, the enterprise can master the current position and status of the goods in real time. The system can realize the visual tracking management, predict and arrange the optimal driving route in advance.

In the warehousing logistics, RFID is used to manage the whole system to improve the efficiency of warehouse management. When the goods enter the warehouse, the reader will automatically read the label and automatically enter the information into the database. At the same time, it can accurately and efficiently complete the delivery of diversified commodities, which greatly reducing the response time, and provide high-level inventory service. More importantly, the information collected by the reader is transmitted back to the management system. The classification of the products in the warehouse according to the ABC law by analyzing the goods turnover will provide the basis for decision-making to reduce the inventory cost and improve the overall efficiency.

As to sales logistics, when the goods with embedded EPC tags are picked up by the customer, the information will be automatically identified and reported to the system. The payment operation can be automatically completed through the internet. Sales information is also automatically transmitted to the system of sellers, financial institutions, suppliers and logistics providers, so that logistics enterprises can realize agile response, to launch active marketing and service.

Uploading the data collected in the above to the server can form logistics big data, which could be used by teachers for scientific research and teaching. Meanwhile, the logistics big data experimental teaching platform provides real big data for enterprises and can meet the needs of big data analysis.

3.2. Internet of Things and Information Technology Processing Platform

Logistics information technology is the basic carrier to realize intelligent logistics activities. The application of logistics information technology can promote modern logistics. Therefore, it is necessary to learn the application of logistics information technology in the field of logistics through the logistics information technology experimental exhibition board, and to master the knowledge of intelligent logistics. The basic experimental platform of the Internet of things and logistics information technology processing is another area of the basic cognitive area of logistics information technology. By using the collection, processing and feedback information display of the Internet of things and logistics information, it fully reflects the three-tier architecture of the application of the Internet of things and logistics information technology: the perception layer, the network layer and the application layer innovation experiment.

The basic experimental platform for Internet of things and logistics information technology processing can provide students with a variety of experimental contents. By adjusting different parameters to carry out experiments, it can help students better master and learn logistics information technology, bar code, RFID and other small-scale application experiments, which can lay a foundation for future intelligent logistics management. The platform can provide barcode

cognition and application experiments, RFID cognition and application experiments, high-frequency RFID principle and function cognition experiments, UHF RFID principle and function cognition experiments, ZIGBEE cognition and application experiments and other experiments.

4. Conclusion

The construction of the intelligent logistics laboratory is of great significance for improving the running level of the logistics specialty, the quality of logistics management personnel, and achieving seamless connection with employment. Its advanced teaching concept, talent-training mode and rich teaching resources are the resource-sharing platform for government departments, enterprise employees, teachers and students. The comprehensive training course is a multi-level and high-quality skilled personnel-training base. After the completion of the training base, it will not only serve students majoring in logistics, but also meet some training needs of e-commerce, marketing, business administration, software engineering and computer.

Acknowledgment

This work was supported by the education reform project (grant number 2020305) of Chongqing Technology and Business University.

References

- [1] Yang Qi, Chen Xiaomeng. New paradigm of university laboratory safety management in the new era [J]. Laboratory research and exploration, 2019, 38 (12): 308-311315
- [2] Zhong Liqiang, Yang Zhi, Su Shuxian. Construction and practice of intelligent nursing laboratory [J]. Laboratory research and exploration, 2020, 39 (9): 286-289.
- [3] Wang Shiguo. Research on comprehensive reform of university laboratory management from the perspective of world-class university highland construction [J]. Experimental technology and management, 2021, 38 (12): 249-254.
- [4] Li Yang. Research on the construction of national laboratories in China and the United States from a comparative perspective [D]. Changchun: Jilin University, 2021.