The construction elements of modern logistics system

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Abstract. The arrival of the Internet era has promoted the development of a large number of emerging technologies, and the logistics industry has also ushered in reform opportunities. To change the problems of high traditional logistics costs and low management level, it is necessary to build a modern logistics system to achieve the goal of reducing logistics costs and promoting national economic growth. The modern logistics system must establish the development goals of informatized, intelligent and traced, and the logistics infrastructure system, logistics operation system and logistics management system are constructed. The four major systems of logistics information system, as well as the infrastructure network, the operation organization network and the intelligent information network, realize the interconnection and interconnection of various systems and networks. In this paper, technologies such as big data, Internet, Internet of Things, cloud computing, blockchain and artificial intelligence are integrated into each system network, and a modern logistics system based on interconnection is creatively proposed.

1. Introduction
Under the "Internet +" national strategy, high-tech such as Internet of Things, big data, data cloud, blockchain, artificial intelligence and so on has emerged. The modern logistics system is efficient, intensive, safe and controllable. Modern management concepts such as accurate and refinement have organically integrated the relatively dispersed links in traditional logistics to form an integrated logistics operation mode [1]. This requires us to have advanced concepts and goals, combined with high-tech such as the Internet, to build a corresponding system network, thus forming a modern and interconnected logistics system.

2. Development Goals

2.1. Logistics system information
The construction of a modern logistics system with interconnection needs to speed up the process of
informationization and provide an information acquisition platform and an exchange publishing platform for both supply and demand sides of logistics services. RFID, GPS, GIS and sensor technology are used to collect and feedback information, and then share and transfer data through cloud computing, M2M technology, digital trunking technology and mobile communication technology. Big data and cloud computing mine the value of data.

2.2. Intelligent logistics system
To realize the interconnection and interoperability of the logistics system, it is necessary to strengthen the promotion and application of smart logistics technology. Smart logistics is a high-level, high-level new form of logistics. It integrates modern information technology such as big data, cloud computing and blockchain with modern management systems and applies them to logistics areas such as warehousing, transportation, and distribution.

2.3. Retroactive logistics system
At this stage, inappropriate human-computer interactions and tampering with data by supervisors frequently occur, making the transaction process less secure. The rise of blockchain technology in recent years has provided a new idea for information security. Through the blockchain technology, the corresponding system is established to avoid information leakage and trace the logistics information of the target goods, strengthen the information transparency of the logistics process, achieve the authenticity of the traceability results, and promote the efficiency of the transaction system and the interconnection of logistics links.

3. The establishment of four major systems

The four systems of logistics infrastructure system, logistics operation system, logistics management system and logistics information system are constructed, and on this basis, the interconnection of the four systems is realized. The infrastructure system is to automate the infrastructure and integrate the transportation network. The logistics operation system must realize intelligent and integrated integration operations. The logistics information system should form a shared, transparent and open environment, and establish a scientific and efficient logistics management system. The development of the modern logistics network system is guaranteed. See Figure 1 below.
3.1. Logistics infrastructure system

The logistics infrastructure includes infrastructure, logistics and transportation tools, logistics distribution centers, and logistics information network facilities. Its main role is to effectively promote the construction of a modern logistics system and ensure its operation. The construction of infrastructure systems must conform to the development goals and achieve the interconnection of modern logistics systems. Before carrying out large-scale infrastructure construction, we must coordinate the layout, starting from the macro level and implementing it to the micro level. According to the specific situation of the local area, rational layout, prevent blind construction, and start work indiscriminately. The construction of transportation facilities is the backbone, and vigorously promote the construction of transportation routes such as roads, railways, aviation, shipping, and pipelines, and achieve the pattern of multimodal transportation, and build a comprehensive three-dimensional logistics system. Secondly, we must improve the logistics park, distribution network and distribution center to provide strong support for the logistics system.

3.2. Logistics operation system

The logistics operation system in the construction of modern logistics system is mainly composed of the functions of logistics. In the process of warehousing, the automated warehouse should be popularized, and RFID technology should be used to establish a warehouse information platform. In the loading and unloading process, people, vehicles and goods are interconnected, and at the same time, facilities and equipment are connected to establish an Internet of Things. In the circulation processing, we must vigorously popularize artificial intelligence technology, realize the UAV trunk transportation and distribution transportation, and popularize the use of unmanned vehicles and self-reporting cabinets.

3.3. Logistics management system

In the actual work, the modern logistics management system not only needs to guarantee the efficient of the modern logistics system, but more importantly, it must be able to form effective management externally. Its constituent elements are not single, but are composed of multiple elements and are modernized. This is an important driving force for the construction of the logistics system. The efficient and scientific logistics management system can provide orderly guarantee for the internal and external management of the logistics system, including: logistics management organization, logistics rules and regulations, logistics business process, logistics evaluation indicators and logistics operation activities.

3.4. Logistics information system

The modern logistics information system is composed of multiple functional systems. Its main role is to provide effective information for the modern logistics system, promote the construction of a contemporary logistics system. It is necessary to establish a logistics information platform to achieve the purpose of information sharing, including traffic information sharing, supply and demand information sharing, policy information sharing, and supply chain information sharing. Actively use RFID intelligent sensing technology, radio communication and "Beidou" satellite positioning system to establish an information platform combining logistics system and market supply and demand[2].
4. The use of new technologies to establish three major networks

In recent years, the vigorous development of emerging technologies such as the Internet, Internet of Things, blockchain, big data, cloud computing and artificial intelligence has brought new development opportunities to the logistics industry. It is necessary to adapt to the trend of the times and apply emerging technologies in the logistics infrastructure system. On the basis of the four major systems, logistics operation system, logistics management system and logistics information system, the infrastructure network, operation organization network and intelligent information network are further established, and the three networks are interconnected to realize an efficient trust mechanism and management mechanism. As shown in Figure 2 below.

Fig 2. Three major networks

4.1. Infrastructure network, operation organization network, intelligent information network

On the basis of establishing an infrastructure system, the network is combined to form an infrastructure network to realize interconnection of inter-regional infrastructure. All modes of transportation must be integrated and managed at the upper level, with complementary advantages. Secondly, realize the interconnection and interconnection of logistics parks, establish a network system of domestic logistics parks, strengthen the links of various logistics nodes, and achieve information interconnection.

Establish an efficient and scientific logistics channel, and ensure that every logistics activity is arranged in a scientific and orderly manner. A cargo from the place of departure to the destination will inevitably go through various operating branches. At this time, the information communication and task division of each branch clearly play a very important task, and an efficient operation organization network is very important. The role is also a prerequisite for the realization of the interconnection of modern logistics systems.

In order to achieve interconnection, we must use emerging technologies to build a modern information system and intelligent information network. To apply logistics information processing technology on a large scale, logistics information processing technology is mainly divided into logistics operation information collection technology, logistics operation information exchange technology, logistics operation information storage technology, logistics operation information processing technology, logistics operation information feedback technology and other related technologies. Comprehensive use of logistics information processing technology, convergence into
information networks, and improve the level of intelligence.

4.2. Emerging technologies in modern logistics systems

Building three major networks is inseparable from the support of emerging technologies. We need to integrate technology from cloud computing, big data, blockchain, Internet, Internet and artificial intelligence as a medium to build interconnections based on emerging technologies.

As a new technology, cloud computing is an opportunity for the development of logistics informationization. With the support of cloud technology, it can provide information resources for all aspects of logistics management. The data resources of all levels in the logistics industry can be integrated to carry out comprehensive logistics resource sharing and application. The logistics management personnel can monitor and control all aspects of the logistics, and the logistics cloud platform will become the command center in the logistics system. By adding big data technology as a technical medium to the modern logistics system, information can be shared in a timely manner, and operational information can be grasped globally, and managers can be strategized and made correct decisions. Blockchain refers to a new application mode of computer technology such as distributed data storage, point-to-point transmission, consensus mechanism, encryption algorithm, etc., and its application prospect in the logistics industry is very huge. In May 2017, Jingdong teamed up with Kelly Cattle to create the first trace of the world's first blockchain. The blockchain anti-counterfeiting and traceability platform of Jingdong District accesses the traceability information of product breeding, production and processing of Kerqin Niuye Group, and combines the information of Jingdong warehouse storage, order, logistics and other information to present the whole process traceability information to consumers. With the development of Internet of Things technology has been listed as an important national development strategy, logistics network technology is bound to become the trend of intelligent development of information in modern logistics industry, and it is also the best source of power to promote logistics modernization, and can inject more fresh vitality into the logistics industry.

5. Establish a sound security mechanism

5.1. Top-level design interconnection

In order to realize the intensification and specialization of the modern logistics system and achieve the informationization, efficiency and security of the logistics operation, it is necessary to have an accurate and detailed top-level design blueprint. The government must take the lead in pulling the role, taking the enterprise as the main body and jointly responsible for overall planning. For example, Nanjing has further accelerated the construction of logistics bases in the urban logistics system, and attracted logistics enterprises to settle in Dingjiazhuang, Lukou, Longtan, and these three major logistics through various unified planning, preferential policy assistance, and active guidance of financial funds. All parts of the country should learn the model of Nanjing to ensure the interconnection between the government and enterprises. The top-level design is interconnected, and the government and the enterprise must establish close communication and cooperation, and share information based on the information platform to make the top-level design transparent.

5.2. Information security

Based on advanced and powerful information system protection software and risk prediction software,
modern logistics systems can take precautions before being attacked. The safety guarantee and system risk prevention technology of the logistics center logistics information system in the logistics system can be divided into two levels. The first level is to create a safe, reliable and confidential system environment to ensure various information in the regional logistics system. System data security and information security. The second level is to actively explore the easy interaction, easy traceability and easy identification of various information systems in the regional logistics system on the basis of the first level.

5.3. Government support and guidance
Modern logistics as a comprehensive industry, the government's strategic policy has a vital role. The formulation of corresponding policies in the government is conducive to the development of modern logistics. Relevant government departments should standardize the logistics market according to actual conditions, reduce the obstacles that restrict the development of modern logistics, liberalize market access, and play a good guiding role of the government. The government should also vigorously support the investment and construction of logistics enterprises, strengthen support, support the development of small and medium-sized enterprises, increase the support of the logistics industry, and form an open examination and approval system. It is also necessary to improve the logistics supervision system of government departments, impose regulatory restrictions on some logistics enterprises, and promote the formation of a fair market order. Logistics standards must rely on government compulsory.

5.4. Talent education
To make the modern logistics system interconnected, it is not enough to rely solely on the construction of technical facilities and the introduction of technology. Professional talent resources are also needed. At present, there are fewer logistics talents, and the talent training model cannot keep up with the needs of modern logistics. Therefore, strengthening the logistics personnel training mechanism and forming a multi-level and diversified logistics talent training model is the core work of the current logistics industry development. Through “bringing in” and “going out”, we will open channels for talents and expand sources of talents to cultivate more talents that can adapt to the operation of the logistics industry[7]. In addition, it is necessary to improve the professional knowledge level of employees in the logistics industry. Enterprises and universities will work closely together to train and educate practitioners. At the same time, it is necessary to strengthen the logistics professional certification work for employees in enterprises, organizations and relevant government departments.

5.5. Management and institutional innovation
Under the background of the national "Internet +" era, the modern logistics system must realize the innovation of logistics system management. With the rapid rise of e-commerce, the modern logistics system should be accurately connected with e-commerce companies, allowing logistics companies to work closely with Internet providers to provide customers with satisfactory services. Enterprises themselves must vigorously promote innovation, government management departments provide corresponding policy support conditions, strengthen technology applications, and continue to maintain research and exploration of high-tech, especially in the field of logistics. The realization of the powers and responsibilities is clear, and the rewards and punishments are clear. It can guide the relevant
practitioners to standardize their behavior and provide standard services.

6. Conclusion
It is necessary to establish a modern logistics system based on interconnection and interconnection. An efficient modern logistics system can reduce logistics costs, stimulate economic growth and improve overall national strength. To realize the efficient operation of the modern logistics system, we must first ensure the interconnection within the system. This requires the logistics industry to actively use emerging technologies to promote the informationization, intelligence and traceability of the modern logistics system. This paper makes a macro plan for the construction of modern logistics system from the aspects of development concept and goal, building system and network, combining emerging technology and security system, aiming to promote the transformation of traditional logistics industry as soon as possible, improve the informationization degree and operational efficiency of logistics industry. And promote economic growth and social progress.

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