

Research on the Construction of Intelligent Emergency Response System in E-Commerce Parks under the Background of Smart City: Taking an E-Commerce Industrial Park in Chongqing as an Example

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Abstract: Government attaches great importance to improving the level of urban emergency management. The informatization and digital construction of smart cities provide convenience for the implementation of urban intelligent emergency management work. In recent years, the e-commerce industrial park has developed rapidly. While it has contributed to promoting national economic growth and social development, sudden safety accidents in the park have occurred from time to time, seriously threatening the life and property safety of the people in the park and surrounding areas. In order to improve the emergency management level of e-commerce parks and promote the construction of intelligent emergency systems, this paper uses literature research and field inspection methods based on the perspective of smart city construction, taking an e-commerce park in Chongqing as an example to summarize its emergency management status and sort out existing problems. Then, based on the actual situation, it is proposed to build an intelligent emergency system for e-commerce parks by improving the intelligent emergency regulations, establishing a complete monitoring system, building a risk early warning system, building an emergency command center, and building a material and personnel reserve system. It is expected to provide reference for the subsequent construction of intelligent emergency systems in e-commerce parks, and promote better development and continuous improvement of intelligent emergency systems in e-commerce parks.

Keywords: E-Commerce Park; Emergency

Management; Intelligent Emergency; Emergency System

1. Introduction

Intelligent emergency response is an important part of smart city construction [1] and an important part of the construction of "Digital China". Its work process can be understood as obtaining multi-faceted data information through sensing and other methods, conducting analysis and judgment, and using the analysis results and judgments to assist in the decision-making process [2]. It is generally believed that an intelligent emergency system is a system that uses modern information technology to integrate various emergency resources and information to achieve intelligent, precise, integrated and efficient emergency management. This system mainly uses technologies such as the Internet of Things, big data, and artificial intelligence to conduct real-time monitoring, early warning, research and judgment, and tackling of emergencies. Through the construction of a smart emergency system, early warning, rapid response and collaborative response capabilities for emergencies can be improved, and casualties and property losses can be minimized. In the context of smart city, intelligent emergencies are characterized by contingency, intelligence and new technologies [3].

With the rapid development of e-commerce, the e-commerce park, as an integrated platform that provides e-commerce services, warehousing logistics, distribution services and other related support, is regarded as an important carrier of the e-commerce industry. Its scale and influence continue to expand, playing a positive role in reducing production and operation costs for enterprises and obtaining economies of scale [4]. Chongqing

is one of the second batch of comprehensive e-commerce pilot zones in China and is the only city in the country with two-way transportation of China-Europe trains. E-commerce plays an important role in its economy, and the number of e-commerce parks is gradually growing. Since its opening, this e-commerce park in Chongqing has built five major platforms, including an e-commerce comprehensive platform and an e-commerce incubation platform. Nearly 900 e-commerce companies have settled in it, including nearly 500 production and sales companies in modern hardware, automobile and motorcycle parts, etc. The cumulative e-commerce transaction volume is nearly 30 billion, and it has been approved as a national e-commerce demonstration base. In recent years, safety accidents in e-commerce parks have occurred from time to time, and safety issues in e-commerce parks have become increasingly prominent, which has restricted the safe development of e-commerce parks. How to build an effective intelligent emergency system to respond to unexpected security incidents has become an important issue faced by e-commerce park administrators.

2. Relevant Study on Emergency Management

Domestic scholars have done a lot of research on emergency management, but most of them focus on emergency management in governments, chemical industry parks, university laboratories, etc. Li pointed out that the informatization of emergency management provides strong support and power for the modernization of emergency management systems and capabilities [5]. Xiang et al. analyzed the challenges faced by improving China's emergency management system and put forward targeted suggestions [6]. Zhong regards the national emergency management system as a whole composed of seven elements [7]. Wang and Wu analyzed the problems existing in the construction of Chongqing's emergency management system and proposed corresponding countermeasures [8]. Yi et al. and Yang et al. respectively discussed the construction of emergency management systems for laboratories in colleges and universities [9, 10]. Ma et al. studied the system architecture of the

construction of smart parks in the chemical industry [11]. Huai et al. and Zhang et al. respectively put forward suggestions on the construction of emergency management system in chemical industry parks [12, 13]. However, the research on the intelligent emergency management system of e-commerce parks is still relatively rare. This paper takes an e-commerce industrial park in Chongqing as an example to discuss the construction of intelligent emergency response system in e-commerce parks, with a view to improving the emergency management level of e-commerce parks, reducing the impact of emergencies, and promoting the production safety of e-commerce parks.

3. Current Status and Existing Problems of Emergency Management in the E-Commerce Park

3.1 Current Status

As a key e-commerce industrial park built by Chongqing City, this e-commerce park's operation scale and business complexity are constantly increasing. In accordance with the relevant document requirements of the Chongqing Municipal Government's emergency management work, the e-commerce park started to strengthen emergency management in the following aspects: the first is building institutional mechanisms. The park has established an emergency management structure composed of key leaders and relevant persons in charge, formulated emergency plans, and made pre-planning and arrangements for possible emergencies to ensure that emergency situations can be handled quickly according to the plan. Second, monitoring and early warning. The park has achieved full coverage of surveillance cameras and organized 24-hour on-duty patrols by security personnel to monitor the sources of risk that may cause emergencies and to detect and warn of potential risks in a timely manner. Once the first signs are discovered, they are immediately reported and appropriate measures are taken. The third is carrying out drills and publicity. The park develops drill plans and uses opportunities such as production safety month and fire safety days to organize emergency drills and carry out publicity. It opens a special column to

popularize science on emergency management such as fire prevention and theft prevention to improve employees' emergency awareness and handling capabilities.

3.2 Existing Problems

The existing emergency management system cannot meet its rapid development needs. The main problems are as follows: First, the concept of emergency management still needs to be changed. At present, the park does not have a deep understanding of the concept of smart emergency response, and the emergency management model focuses on post-processing, mainly focusing on how to reduce losses caused by emergencies. Some leaders of the park believe that the current measures can meet the basic needs of emergency management of emergencies. There is no need to build a more complete smart emergency system, and there are insufficient funds and personnel. Second, the early warning system is imperfect. Relying only on traditional methods such as camera monitoring and security patrols, there are insufficient smart emergency equipment, platforms and technical personnel, and a comprehensive smart emergency warning and monitoring system without blind spots has not been built. The application of information technology is low and lacks integration. Third, emergency decision-making lacks scientific basis. In the face of emergencies, relevant departments cannot share timely information, and there are no efficient information transmission channels. "Information islands" still exist [14], and there is a lack of intelligent technical support, comprehensive data support and intelligent command and dispatch means. , the decision-making process is mainly based on past experience or plans, and the existing emergency plans still need to be improved. Fourth, the allocation of emergency resources is not reasonable enough. The park has a small amount of fire-fighting, flood control, and medical-related emergency rescue materials. The number and types of emergency material reserves of enterprises in the park vary. There is no unified storage site and standard, and there is no unified management. In addition, the park is located in the Sichuan-Chongqing seismic zone. In the event of an earthquake or other disaster, there may be no corresponding material reserves, or it may not be possible to

mobilize them as soon as possible.

4. Measures to Build the Intelligent Emergency System of the E-Commerce Park

The construction of an intelligent emergency system in an e-commerce park is a complex project, involving multiple emergency response entities such as the government, the park, community, emergency organizations, and property management companies, etc. It requires government departments and park leaders to change their concepts and attach importance to support. It also requires collaboration between various park management departments, enterprises, and communities.

4.1 Improving the Intelligent Emergency Regulations

Ruling by law is a principle of China, which requires smart emergency response and public safety risk monitoring to be based on laws and regulations. From the government perspective, in the context of smart city construction, government departments at all levels should formulate relevant laws and regulations based on risk forms and social development trends. On the one hand, it shows that the government departments attach great importance to it; on the other hand, it promotes the standardization and efficient implementation of smart emergency work. In addition, intelligent emergency risk monitoring will inevitably involve privacy and data security issues, which require clear boundaries in laws and regulations. From the perspective of the e-commerce park, smart emergency construction is an important project that requires the attention of park leaders. The park should also improve regulations related to smart emergency management in accordance with the spirit of superior documents.

4.2 Establishing an Intelligent Monitoring System

The intelligent monitoring system is the cornerstone of the intelligent emergency system. It is mainly based on digital video images and is gradually connected to relevant professional signals, data, sensing or detection equipment at all levels [15]. To create an intelligent sensing and monitoring system and give full play to big data, artificial intelligence,

block chain and Internet of Things technologies, firstly, we should monitor all kinds of facilities and equipments in the park in real time, so as to achieve all-round and dead-end real-time monitoring of the park, and carry out extensive information collection. The second is to integrate previous typical intelligent emergency management situations, allowing comparison and analysis at any time. The third is to strengthen organizational construction, establish a risk monitoring department, train professional personnel to be responsible for risk monitoring in the park, and identify, summarize, and analyze risk information. The fourth is to obtain information through multiple channels such as emergency management departments, park network platforms and APPs, mobilize all parties to collect risk information, implement real-time data and information summary and sharing, and prepare for timely detection of abnormalities and response. The system should have functions such as face recognition, license plate recognition, and abnormal behavior detection, so that abnormal situations can be discovered in a timely manner and corresponding measures can be taken. At the same time, monitoring data should be stored on a reliable cloud platform to ensure data security and traceability.

4.3 Building an Intelligent Risk Early Warning System

The intelligent early warning system should rely on the Internet and Internet of Things technology to integrate data information, identify, analyze, and judge risk information, provide real-time early warning of various safety hazards in the park, improve the ability to identify risks early, and realize a complete closed loop of real-time feedback of data information. For example, fire hazards can be discovered in a timely manner by monitoring smoke, carbon monoxide and other gases in the park; by monitoring power equipment, power faults can be detected immediately. After the risk information has been determined, the early warning system should function as an intelligent analysis and research and judgement system, capable of predicting possible security incidents and their impacts and avoiding secondary disasters based on historical and real-time data, providing an instructive emergency plan and a scientific

basis for emergency decision-making.

4.4 Building an Intelligent Emergency Command Center

The emergency command center is the core of the intelligent emergency system of the e-commerce park and is responsible for coordinating the emergency management of the park. Once a disaster or accident occurs, it immediately starts the digital emergency plan, builds emergency rescue and disposal scenarios, coordinates resources, collaborates with all parties, and promotes the realization of online presentation and offline response of the command process [16]. The emergency command center should be equipped with an advanced emergency command system, including video surveillance, alarm systems, communication equipment, etc., to quickly realize information interoperability and data sharing, break information islands, grasp the security status of the park in a timely manner, command and dispatch resources from all parties, improve the coordination and linkage of emergency response, and deal with emergencies in a timely and efficient manner.

4.5 Building a Material and Personnel Reserve System

Investigation and research, risk identification, etc. of natural disasters and safety production within the geographical scope of the e-commerce park need to be carried out. Based on actual conditions, the park needs to build matching emergency rescue equipment standards, formulate emergency material reserve standards, standardize emergency material procurement, storage, distribution and other processes, and achieve dynamic management of the entire process through data sharing. It also needs to increase capital investment, conduct regular training, strengthen the creation of a team of personnel with both professional risk knowledge and smart emergency technology, and establish a reserve talent pool for smart emergency rescue in the park. When an emergency occurs, materials and personnel can be deployed nearby as soon as possible to ensure that emergency materials and personnel arrive at the scene quickly and sufficiently to complete emergency rescue work. When an emergency occurs, materials and personnel can be deployed nearby as soon as possible to ensure

that emergency materials and personnel arrive at the scene in a timely and sufficient manner to complete emergency rescue work.

5. Conclusion

Intelligent emergency response is the direction of modernization of emergency management and an inevitable choice to promote the modernization of emergency management systems and capabilities. The "14th Five-Year Plan National Emergency System Plan" points out that it is necessary to systematically promote the construction of smart emergency response and establish an emergency data management system. The construction of an intelligent emergency system for e-commerce industrial parks can provide an efficient emergency management model for e-commerce parks. This paper starts from the current situation of emergency management in e-commerce parks, analyzes its existing problems, and proposes to build a smart emergency system by improving the smart emergency management system, establishing a complete monitoring system, early warning system, emergency command center and material and personnel reserve system, so as to achieve The organic combination of "intelligent defense" and "human defense". It helps e-commerce parks to effectively prevent and intervene on security risks, respond quickly and effectively to emergencies, improving the operational efficiency and safety of e-commerce parks, reducing the impact of emergencies on e-commerce park operations, and providing theoretical inspiration and practical reference for the "smart" development of emergency management in e-commerce parks. In future development, e-commerce parks should continue to strengthen the construction of intelligent emergency systems, improve the safety and stability of the park, and provide a strong guarantee for the rapid development of the e-commerce industry. At the same time, e-commerce parks should also strengthen cooperation with the government and all aspects of society to collaboratively promote the construction and development of intelligent emergency systems. The development of information technology is changing with each passing day. Smart emergency response is a constantly updated topic that requires support and attention at the

national policy level. It also requires scholars to conduct in-depth research on all aspects of smart emergency response to promote the construction of smart emergency systems to play an active role in risk prediction, early warning, emergency decision-making and other aspects of urban public security, production safety and other fields.

Acknowledgements

This paper is one of the results of the "Belt and Road" E-commerce Collaborative Innovation Center of Chongqing Business Vocational College. This work was supported by a Chongqing E-commerce industrial park.

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