

Analysis and Countermeasures for the Development of Emergency Logistics in China in the Context of COVID-19 Pandemic Based on SWOT analysis

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Abstract. By focusing on the current situation and issues of the development of China's emergency logistics in the context of COVID-19 pandemic, this paper employs SWOT analysis to investigate the advantages and disadvantages of the internal and external environment, opportunities and threats faced by China's emergency logistics and selects the opportunity-disadvantage strategy to propose suggestions for the future development of emergency logistics.

Keywords: Emergency logistics, SWOT model, COVID-19.

1. Introduction

In early 2020, a sudden pandemic swept across the world, causing huge losses to people's lives and property, social stability and economic development. During the pandemic, a large amount of emergency supplies were sent to Wuhan for support, and emergency logistics became a crucial part of the fight against the pandemic. Meanwhile, China's emergency logistics system was also exposed to a huge shortage in such a severe disaster. At present, the development of emergency logistics in China does not adapt to its economic development, and the existing ideas and methods of emergency logistics can no longer meet the needs of social development. Therefore, taking the COVID-19 pandemic as research background this paper carries out a SWOT analysis on the development status of China's emergency logistics, and selects the corresponding strategy and suggestions according to the analysis results. Finally, the results and shortcomings of this study are summarized.

2. Overview of Emergency Logistics

2.1 Concept of emergency logistics

Emergency logistics originated in the United States and was originally related to military logistics. After the World War II, a lot of experts and scholars in the United States put forward their views on the logistics supply in the war[1]. The concept of emergency logistics was firstly proposed by Ou Zhongwen in 2004[2]. Using the concept proposed by him, this paper defines emergency logistics as a particular kind of logistics activity that provides the supplies required for emergencies such as natural disaster and public health emergency with the aim of maximizing time efficiency and minimizing disaster losses.

2.2 Characteristics of emergency logistics:

Like ordinary logistics, emergency logistics is composed of fluid, carrier, flow and other elements, and it has space utility, time utility and form utility. However, different from ordinary logistics, it is characterized by abruptness, weak economy, uncertainty and irregularity.

3. SWOT Analysis of the Development of China's Emergency Logistics

3.1 Analysis of the internal environment for the development of China's emergency logistics

1) Strengths

Firstly, emergency logistics has begun to take shape. The current emergency logistics system in China is under the unified command, centralized deployment and mutual cooperation of the state administrative departments, local governments and functional departments at all levels. On the basis of administrative force, the unified organization and command of emergency logistics support activities makes the whole logistics operation process more compact and logistics behavior shows a strong military color, making emergency logistics response more rapidly during disasters.

Secondly, Chinese government attaches great importance to the development of emergency management. As the administrative leader of emergency response activities, the Government has successively issued many policies to deal with public emergencies, such as the National Overall Emergency Response Plan for Public Emergencies and the Twelfth Five-Year Plan for the Development of Transport Safety and Emergency Response Systems, and the 2014 Opinions on Accelerating the Development of the Emergency Response Industry.

Thirdly, logistics companies have diversified their choices. During the period of pandemic prevention and control, the State Post Bureau organized China Post, SF, Jingdong and other major domestic express and logistics companies to give fully play to their respective advantages, effectively ensuring the basic needs of people around the Spring Festival. Meanwhile, thirteen enterprises, including ZTO, STO, YUNDA, YTO, Bestway, Deppon and Alibaba, opened green channels for domestic and global relief supplies, and transported socially donated relief supplies from home and abroad to Wuhan for free.

2) Weaknesses

First, corresponding laws and regulations are not perfect. Currently, no laws and regulations are available in China to regulate leadership system, requisition of relevant equipment, plan formulation, implementation procedures, compensation and pension, financing guarantees and routine practice of maintenance and repair of traffic lines and construction of temporary stations (stations) in case of emergencies, thus result in "no way to follow" emergency logistics and transportation safety. For a long time, railways and roads have been the main means of transporting goods in most parts of the country. Owing to the imbalance of economic development, there are considerable regional differences in logistics transport. The backward transportation means seriously affects the transport efficiency of emergency logistics.

Second, the emergency logistics system information degree is not enough. In the information management of emergency supplies, there is a lack of standardized classification standard system for disaster relief supplies, and a lack of unified and standardized material donation, donation, archive distribution and information statistics. In addition, as there is lack of a unified platform for emergency logistics information sharing and release, emergency commanding agencies are not able to accurately capture the detailed information of emergency events and operation of emergency logistics, leading to an inaccurate analysis and judgment. And the needs of emergency logistics cannot be met in a timely manner because of insufficient communication.

Third, emergency supplies reserve is not well planned. In addition to the orderly allocation of the government, it is difficult to predict and control the purchase of emergency supplies, type, quantity, time and downstream demand, without any planning, thus disrupting the normal rhythm of logistics.

Fourth, the protection of emergency supplies is not sufficiently scientific. Due to the insufficient quantity and unreasonable layout of China's state-level emergency material reserve warehouses, coupled with the imbalance of China's regional economic development, regions with low productivity often have a strong dependence on the external environment in the face of emergencies. Meanwhile, supplies in the state-level disaster relief supplies reserve are small in scale and of a single variety, which are far from meeting actual needs. This problem was clearly exposed during the COVID-19 pandemic: In the early stage of the pandemic outbreak, Wuhan Hospital had improperly deployed

medical supplies in many places, which not only posed a threat to the health of medical staff, but also made it more difficult to control the pandemic.

Fifth, the organizational mechanism of emergency logistics is not sound. At present, most of the emergency logistics organization and coordination personnel were temporarily transferred from various units, and emergency supplies procurement, transportation, storage, allocation, recovery and other functions are distributed in different departments, regions and enterprises, so the linkage organizational mechanism between relevant departments of the central government, between the central government and local governments, and between the central government and relevant enterprises has not yet been formed. Due to the strong temporary nature of the emergency logistics organization, the coordination, communication and integration among members still need to be improved. The organization as a whole is not systematic, foresighted and efficient.

3.2 Analysis of the external environment for the development of China's emergency logistics

1) Opportunity

Firstly, the handling of COVID-19 pandemic has provided valuable experience for the further development of China's emergency logistics. In fighting the COVID-19 pandemic, China's emergency logistics has exposed many shortcomings, which also highlight the key to China's emergency logistics at present. . The failure and success of reasonable emergency logistics activities from the emergency logistics will indicate the future research direction of China's emergency logistics.

The second is the active guidance of the CPC Central Committee. At the meeting of the 12th Central Committee of the CPC Central Committee for Comprehensively Deepening Reform, President Xi Jinping clearly stressed the need to improve the unified emergency material safety system. Emergency material safety is an important part of the construction of the national emergency management system, and relevant working mechanisms and emergency plans should be improved as soon as possible [3].

Thirdly, China's economy is in a favorable condition. With the rapid development of China's economy and the improvement of its international status, the development of information technology in China has been given a broader space for innovation and resources. Meanwhile, the process of economic globalization to a certain extent has provided a technical reference for the information construction of China's emergency logistics.

2) Threats

Firstly, market environment is under threat. Although the government is considered to be a direct purchaser of emergency supplies, in practice it is difficult for public institutions alone to meet the needs of emergency supplies. In case of sudden emergencies, the government usually temporarily deploys materials, and the government's demand for information often has a certain lag, which leads to the fact that the deployment of materials is often different from the actual demand for materials.

Secondly, the development of emergency logistics is subject to institutional obstacles. For a long time, China's economic development in the systemic obstacles have not been completely eliminated, which is closely related to China's special national conditions and the stage in which it is located, directly affecting the formation of industry, development and even the enhancement of competitiveness. Therefore, institutional barriers are also an important external threat to China's emergency logistics industry in the early stage of development when a sound emergency system has not yet been formed.

The third is technical threat. The sudden outbreak of the pandemic has exposed the shortage of logistics operation ability in China and sounded the alarm for China's supply chain. A large part of the reason is that China's logistics infrastructure is not perfect enough, and logistics operation and reserve capacity is insufficient, such as air cargo capacity, emergency logistics hub capacity, etc. Compared with China, foreign countries have mastered some cutting-edge logistics technologies, such as Germany's advanced intelligent warehouse automation technology. Therefore, domestic

logistics enterprises still face the threat of technological competition from foreign advanced logistics enterprises in terms of technological development.

4. Strategic Choice and Measures

The above analysis shows that there are strengths, weaknesses, opportunities and threats in the development of China's emergency logistics. Therefore, the SWOT matrix model of China's emergency logistics is shown in Table 1.

Table 1. The SWOT matrix model of China's emergency logistics

Internal environment analysis External environmental analysis	STRENGTH	WEAKNESS
	- Emergency logistics system has begun to take shape - The development of emergency management is attached importance by the government - There are multiple logistics companies to choose from	- The corresponding regulations are not perfect enough - The emergency logistics system information degree is not enough - Emergency supplies reserve lack of planning - Emergency supplies to ensure the scientific insufficiency - The organization mechanism of emergency logistics is not perfect
OPPORTUNITY	S-O strategy	W-O strategy
- The timely treatment of COVID-19 provides valuable experience for the further development of China's emergency logistics - The positive guidance of the Party Central Committee - Our country's economic development is in good condition	- Increase policy support for emergency logistics research - Strengthen the construction of emergency logistics industry cluster - Further construction of military-local logistics integration	- Further improve the corresponding regulations and regulations of emergency logistics - Increase capital investment to establish a unified emergency logistics information sharing and release platform - Strengthen the construction of emergency logistics organization mechanism - Strengthen the construction of emergency logistics material reserve system
THREATS	S-T strategy	W-T strategy
- Market environment threat - The development of emergency logistics is subject to institutional obstacles - Technical threat	- To rely on industrial clusters to achieve industrial marketization - Use the competitive advantage of logistics enterprises to mitigate institutional threats - To actively promote international cooperation	- Break institutional barriers - Improve the emergency logistics information construction as soon as possible - Increase financial input

China's logistics industry is currently in a period of vigorous development, China should seize the opportunity of the external environment for developing its emergency logistics to make up for the internal disadvantages, that is, to adopt W-O strategy. Thus, the following measures are suggested.

4.1 Further improve laws and regulations related to emergency logistics

From a global perspective, national laws play an important role in responding to emergencies such as natural disasters. The legal mechanism of emergency logistics is actually a mandatory national mobilization and a mandatory guarantee system. Therefore, we should strive to perfect the legal system of emergency logistics and transport, and realize the legalization of logistics and transport security of the whole society.

4.2 Improve the organizational mechanism for emergency logistics

In terms of strengthening the coordination of emergency logistics organizations, it is crucial to further strengthen the integration of military-civil coordination. Undoubtedly, military force has always been playing an important role in China's various emergency and disaster relief activities. With strong mobility, unified command and continuous training, the People's Liberation Army is

better able to respond quickly to emergencies than other local organizations. However, due to the limited capacity of logistics resources, specific disaster relief activities still need to rely on the support of local governments, logistics enterprises and other organizations. Therefore, only by perfecting the construction of the organizational mechanism of emergency logistics can we further coordinate the cooperation of various organizations in emergency logistics activities and improve efficiency.

4.3 Establish a unified platform for emergency logistics information sharing and dissemination

Information plays a leading role in emergency logistics operation, and the establishment of information platform can integrate the supply and demand information of emergency supplies at the first time of emergencies, optimize the regulation of logistics, realize the visibility and control of the whole process of emergency logistics, improve the response speed of logistics, and reduce the cost of emergency logistics.

4.4 Enhance emergency logistics reserve system.

Studying and learning from foreign experience, we are realizing the organic combination of specialization and socialization of emergency supplies reserves, and building an integrated reserve system for the state, local, enterprises and even families. We should strengthen reserves of emergency supplies and make reasonable arrangements for their distribution, size and structure. And it is also necessary to give play to market competition mechanism and safeguard the storage of emergency supplies.

5. Conclusion

By observing and analyzing the current situation and performance of China's emergency logistics in the context of the COVID-19 pandemic, this paper employs SWOT analysis to investigate and analyze the internal and external environment of the development of China's emergency logistics. Thus, we should take advantage of opportunities, eliminate threats, further improve relevant laws and regulations, enhance the construction of the organizational mechanism of emergency logistics, establish a unified emergency logistics information release platform and enhance the construction of material reserve system for emergency logistics for better developing China's emergency logistics.

Although SWOT analysis has the advantages of being comprehensive, intuitive and systematic, it inevitably has the disadvantages of being too general, abstract and subjective, which makes the study not detailed enough [4]. Therefore, in the future research, we can try other analytical tools to more comprehensively study the development of emergency logistics in China.

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