

# *Research on Logistics Optimization of Daily Necessities Supply Chain Based on Emergency Management*

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**Abstract:** In a state of emergency, there are problems such as supply and demand imbalance, supply and demand information asymmetry, small supply chain flexibility, slow response speed, lack of transportation capacity, and difficulty in returning logistics staff to work. Aiming at these problems, the author starts from building an intelligent daily necessities supply chain management platform, innovative business models, and the use of advanced technology to optimize terminal logistics distribution, etc., to explore and analyze the optimization plan for the emergency supply chain of daily necessities.

In recent years, the logistics industry has developed rapidly. Many enterprises have used advanced technical means to deeply integrate the production, online and offline sales and circulation of commodities, so that the supply chain logistics model has been continuously innovated[1]. However, the supply of daily necessities, especially in emergency situations, has problems such as supply and demand imbalance, information asymmetry between supply and demand, small supply chain flexibility, slow response speed, lack of transportation capacity, and logistics "labor shortage". When an emergency occurs, it will seriously affect the "rice bag" and "vegetable basket" of the people[2]. In response to these problems, the author explores feasible solutions from the aspects of building an intelligent people's livelihood supply chain management platform, innovative business models, and using advanced technologies to optimize terminal logistics and distribution, and constantly improving the daily necessities emergency supply chain service system to ensure the production and life of urban and rural residents. smooth and orderly.

## **1. Strengthen Government Leadership and Build an Intelligent Daily Necessities Supply Chain Management Platform**

The logistics supply chain system in the normal state is a market economy leading by non-governmental organizations, while the logistics supply chain in an emergency state requires rapid response under professional guidance, and is a planned economy dominated by the government. In response to the imbalance of supply and demand of living materials and asymmetric supply and demand information under emergencies, the government needs to collect and integrate complete information, arrange the deployment of materials, and rely on professional supply chain logistics to solve the problem of unsalable agricultural products and fresh products on the one hand. On the other hand, let residents have fresh fruits and vegetables at their doorsteps. With the help of

this platform, it is possible to carry out systematic data collection of daily necessities, input material information on the supply side at the front end, connect with the sales logistics data of the demand side at the back end, and manage the whole process with big data to improve the efficiency of material allocation[3]. With the help of big data analysis of the smart supply chain, it is also possible to make scientific predictions on the market situation, help relevant agricultural enterprises to adjust product output in a timely manner, and achieve a balance between production and sales as much as possible to maximize profits.

For the supply chain in an emergency state, top-level design should be done under the division of labor and cooperation between the government and enterprises. The government should use the information platform to integrate and allocate materials, and rely on logistics enterprises to form a complete and agile information supply chain network[4]. For example, the "community O2O platform" that has emerged in recent years is mainly aimed at the daily consumption of community families, and the combination of online and offline provides convenience for people's lives. In emergencies, the government can integrate, coordinate, and guide these platforms, and conduct safety inspections and quality supervision of products on the platforms, so that residents can purchase living materials with safe quality, variety and reasonable prices through the platform. After emergencies, the functions of the platform will also be continuously improved, gradually changing from an emergency state to a normal one, realizing the continuous optimization of the supply chain of daily necessities[5].

## **2. Innovate the Business Model and Promote the Optimization and Upgrading of Daily Necessities Supply Chain**

The resilience and response speed of the supply chain will be particularly important in an emergency. For the daily necessities supply chain, good elasticity and response speed can help the upstream and downstream entities of the supply chain to offset part of the impact of the external market, so as to find a way to survive in a volatile market environment. In the event of an emergency, the evolution of some models can be promoted to form an end-to-end supply chain model from production to circulation to achieve the coordination of production and sales .

### **(1) Promote the layout of front-end warehouses and realize the flattening of circulation channels**

In order to shorten the distance between consumers and goods and improve the distribution efficiency of goods, some supermarket enterprises and e-commerce companies have specially introduced a warehousing model of front warehouse, which provides a new way to optimize the supply chain of daily necessities. The warehousing mode of the front-end warehouses can realize the direct purchase at the origin, and form a supply chain logistics system from the supplier in the origin to the front warehouse and then to the final consumer, so as to flatten the circulation channel. This model has been widely used in recent years, especially for the warehousing and distribution of fresh commodities. Through the front warehouse, the resources of upstream suppliers in the supply chain can be better integrated, the needs of downstream consumers can be more accurately grasped, and the supply end, consumer end and logistics end of the supply chain can be linked together, thereby shortening the length of the supply chain. Enhance supply chain visibility and responsiveness.

The front-end warehouse is located at the end node of the supply chain close to the client, and is the data center closest to the client in the supply chain. With the continuous advancement of big data analysis technology, accurate consumer demand information can be obtained through accurate traffic forecasting, so as to determine the purchase plan of commodities, and adjust the quantity and variety of commodities in a timely manner. In the event of emergencies, it not only improves the operational efficiency of the civil material supply chain, but also alleviates the problems of material

supply and demand imbalance and supply and demand information asymmetry. Coupled with the advantages of in-depth community and delivery timeliness, the importance of front-end warehouses at present is obvious. After emergencies, the advanced warehouse management information system and the application of automated facilities and equipment can be used to improve the management efficiency of the front-end warehouse, speed up the circulation of goods, reduce the loss of goods, and promote the optimization and upgrading of the civil material supply chain with the innovative development of the front-end warehouse.

(2) Vigorously develop new retail and promote the deep integration of logistics and trade

Emergencies have brought a huge impact on the social economy and brought business opportunities to some industries. The new retail model based on the deep integration of online and offline and modern logistics based on the Internet has gained new development. This model can use advanced technical means such as artificial intelligence and big data to realize the upgrading and transformation of the process of commodity production, sales and circulation. It can integrate intangible and tangible resources, integrate offline and online platforms, break the barriers existing in traditional business models in terms of time and space, products, etc., and remove barriers between various entities in the supply chain, so as to realize the entire supply chain. Chain sharing and interconnection. In the event of emergencies, the Minsheng material wholesale market and department store supermarkets should be encouraged to use new technologies such as big data and cloud computing to carry out digital transformation and upgrading, extend the development of new retail, accelerate online layout, and achieve online and offline integrated development. At the same time, sales can be promoted through online channels such as live broadcasts, short videos, and small programs to meet the needs of residents to buy daily necessities without going out and without contact.

### **3. Use Advanced Technology to Optimize the Terminal Logistics Distribution Mode**

The "stay at home" model under the current public health emergency has increased consumers' demand for online shopping and contactless door-to-door delivery, which will make the terminal logistics distribution under the new retail model face broad prospects and fierce competition. With the flexibility and agility of consumers' demand for logistics services, traditional technologies and models have been unable to meet the needs. It is urgent to use advanced information technology and automation technology as means to promote the upgrading and transformation of terminal logistics and distribution.

(1) Increase the application of unmanned distribution technology and promote the intelligent development of logistics distribution

With the high-quality development of the economy and society, people's requirements for the quality of logistics services are getting higher and higher. Advanced logistics information technology and automation facilities and equipment are constantly emerging. Intelligent distribution equipment such as AGV trolleys and drones has been distributed at some terminals. The application in the service greatly reduces labor costs, improves distribution efficiency, and promotes the transformation of the logistics industry from labor-intensive to technology-intensive. In the process of epidemic prevention and control, unmanned distribution technology has shown its unique advantages. On the one hand, it can relieve the pressure of logistics practitioners' difficulty in recruiting workers and improve the efficiency of material operation when manpower is in short supply; on the other hand, it can break through the restrictions of traffic control, improve the delivery efficiency of the last mile; in addition, it can avoid the contact between the delivery personnel and the customer, and reduce the risk. Various scenarios that appear in emergencies will force the development of unmanned distribution technology, which will greatly promote the entire

industry. Intelligent logistics distribution will also become an important trend in the development of the logistics industry.

(2) Strengthen the collaborative management of smart delivery facilities by community properties, and promote contactless delivery services

In recent years, with the support of national policies, advanced delivery facilities such as smart express cabinets have been widely used, which has greatly reduced terminal logistics and distribution costs and improved distribution efficiency. However, the current layout is mainly based on first- and second-tier cities, and the penetration rate in the community is still low. Under the current situation of public health emergencies, most consumers hope to obtain their purchased materials through contactless distribution, and logistics and distribution personnel do not want to have direct contact with consumers. Relevant national conferences also emphasized that smart delivery facilities should be incorporated into Urban and rural public infrastructure. In these contexts, smart express cabinets will become the development trend of terminal distribution.

#### 4. Conclusions

When emergencies occur, in order to reduce going out, most community residents choose to buy living materials online, and a large part of them are fresh materials such as vegetables, fruits, and meat. In this case, one is that the number of existing express cabinets is insufficient, the other is that ordinary express cabinets do not have the function of temperature control and adjustment, and cannot meet the distribution needs of fresh products, and the third is that a large number of materials are stored in express cabinets every day. Security risks. In order to quickly solve these problems, the simple charging relationship between smart express cabinets and community properties can be changed and upgraded to a cooperative relationship. On the one hand, the property's existing departmental staff and monitoring equipment are used to ensure the safety of materials stored in express cabinets; on the one hand, the property's refrigerators, freezers and other refrigeration equipment are used to temporarily store fresh materials for distribution; on the other hand, the final home delivery can be developed. As one of the property service projects, the property staff will put the living materials purchased by the residents in front of the door of each household, so that the residents can get fresh ingredients as soon as they open the door, and truly achieve contactless delivery.

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