

The impact of COVID-19 on supply chain of cross-border logistics: review and suggestions

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Abstract. In the end of 2019, an unprecedented outbreak which commonly called COVID-19 occurred in Wuhan, Hubei Province, China, and soon extended nationwide. In order to control the spread to inhibit further deterioration, the central government announces total China lockdown to tackle corona virus, which poses a dilemma to the logistics of China both inland and cross-border trade. In response to the call of country to stay home, most companies have started to limit the working hours of workers, these largely reduced the efficiency of enterprises. Beside that government have established the policy that cargoes and the person who in charge of transport needed be exam for whether they have carry the virus during the transportation, which would exert some effect on not only the inland logistics but also that of multinational logistic such as lengthen the delivery time. This essay aim to dig out the main issues existing in supply chain during the pandemic and give proper solutions to ease the troubles.

Keywords: COVID-19; Cross-border Trade; Supply Chain

1. Introduction

Based on previous research, we found that COVID-19 has severely hit a large number of economies around the world, with significant delays in business recovery and damage to production networks. Many industries are facing supply shortages leading to misalignment of upstream and downstream supply chains, unprecedented disruptions and delays in product delivery times and order quality, gaps in supply chain architecture and large fluctuations in supply and demand, thus impacting global value chains, supply chains, trade and investment and accelerating the anti-globalization trend [1,2]. Accordingly, The essay try to discuss the domestic situation in China as a starting point to further analyze the cross-border supply situation between China and overseas.

Due to the widespread expansion of COVID-19, China's economic situation is nearly stagnant. The outbreak coincided with Chinese New Year, and most companies would reduce their inventory to cut costs. After the outbreak, people were restricted to go out, communities were closed, public transportation were shut down, and most small and medium-sized businesses could not resume work, which directly led to supply shortages. On May 14, 2020, President Xi Jinping announced at the Fifth Plenary Session of the Central Committee of the Communist Party of China (CPC) and the Outline of National Economic and Social Development of the People's Republic of China the idea of "building a new development pattern of domestic and international circulation and mutual promotion" and the long-term goal of 2035 [3]. This has set the direction for China's economic development.

Internationally, due to the reform and opening-up policy and the huge demographic dividend, as well as a more open external environment, China's economy has been increasingly integrated into the international division of labor for more than 40 years and has become the most dynamic part of the global economic stage. The market share of Chinese products has remained at more than 10% of the global market. At the same time, China's foreign investment inflow has been maintained at a high level, and the World Investment Report 2019 released by UNCTAD shows that China absorbed a record high of foreign investment in 2018, ranking second only to the United States at \$139 billion, accounting for more than 10% of the total global foreign investment absorption; foreign direct investment was \$130 billion, second only to Japan at \$143 billion. These figures show that Chinese

manufacturing is deeply integrated into the world economy and has become an important part of the global supply chain [4]. And the arrival of the epidemic has made it even more transparent for the world to understand how much they depend on "Made in China". In fact, there are at least 51,000 companies worldwide that need Chinese companies as Tier 1 suppliers and over 5 million companies that need Chinese companies as Tier 2 suppliers. This shows the importance of China in cross-border logistics.

2. Situation of cross-border logistic before the covid-19

2.1 The situation in China

Since President Xi came to power, China's economy has developed steadily in a positive direction. In 2019, in the face of the complex situation of significantly rising risks and challenges in mainland and abroad. All regions and departments earnestly implement the Party Central Committee and the State Council's decisions and plans, actively promote high-quality development of economy, the national economy is generally running smoothly, the quality of development is steadily improving, and the main expected goals are better achieved, laying a solid foundation for the overall building of a well-off society. It means with active policy support, China's economic development is on a solid foundation and merchants can operate as profitably as possible in a domestic environment with good economic conditions, which encourages them to maintain production and even improve service quality to achieve higher customer satisfaction and higher repurchase rates, ultimately creating a virtuous cycle. The positive economic development also provides more jobs for the society, increases the disposable income, improved the consumption level of the population, and people are more willing to spend rather than save, which accelerates the circulation of cash in the Chinese market.

2.1.1 Substantial economy

In 2019, China's circulation industry has more than 70 million actual market entities, absorbing employment of about 200 million people, the circulation industry has become an important carrier of entrepreneurship and innovation, which has strongly contributed to the stable development of the economy and the improvement of people's livelihood. Total retail sales of consumer goods amounted to RMB 411,164.9 billion, representing a nominal growth of 8.0% over the previous year (6.0% real growth net of price factors). Among them, retail sales of consumer goods other than automobiles amounted to RMB 372,260 billion, an increase of 9.0% [5, 6].

However, whether companies recognize the new retail or not, and whether the nature of retail is changing or unchanging, most companies in China's traditional retail industry are starting to explore change actions in 2019. Unlike the booming innovation in online retail, the changes in offline retail are happening silently. It's certain that China's traditional retail industry has entered a period of change and innovation from 2019. 8% of the small store owners surveyed try to cooperate with online sales, takeaway delivery and social platforms to enhance the binding relationship with the consumers of the surrounding fixed groups. Their daily transactions generated through third-party platforms such as social platforms, takeaway platforms, and e-commerce delivery accounted for 13% of all-day transactions. Currently, there are over 2.3 million small traditional retail stores in China, which will be an important engine for future growth and a major reform of the retail industry [7].

2.1.2 On-line economy

With the development of communication technology in recent years, the popularity of smart phones, the growth of e-commerce platforms, the renewal of consumer attitudes and young consumers gradually become the backbone of consumption, the growth rate and proportion of online consumption continues to increase. The annual national online retail sales of 1,063.24 billion yuan, an increase of 16.5% over the previous year. Among them, the online retail sales of physical goods 8,523.9 billion yuan, an increase of 19.5%, accounting for 20.7% of the total retail sales of consumer goods, an increase of 2.3 percentage points over the previous year [6]. Due to the accelerated pace of

life today, people are more inclined to shop online, which allows them to save as much time as possible by waiting for goods to be delivered automatically to their doorstep without interrupting their work or studies. On the other hand, online retail offers customers a wider selection of categories than traditional retail. People can search for tens of thousands of similar products directly from a fixed place using a mobile app and can complete the purchase in a shorter period of time rather than walking from store to store on foot.

2.2 The situation overseas

Before the covid-19 hit the logistic overseas it has been developed in really fast pace due to the on-line perches the merchandise is development in to habit for those who do not have much time to choose the product. It has to be admitted that the whole progress has been accelerate by this phenomenon. Besides that, with the development of technology and improvement of production methods, the quality of production which made in China is become better and better in crazy speed thus led to market of overseas become to embrace the Chinese goods. In addition, globalization have exerted great potential on China cross-order logistics. What is more, depend on the development of the internet and economy, situation of China cross-border trade has been better compare with situation back in ten years. This can be explained by the fact that internet have been shorten the time that people have to wait for the clearance by the government and the process in bank. Such development would not only accelerate the process in multinational logistics but also enhance capital flow.

2.2.1 Substantial economy

For the perspective of substantial economy of China cross-border logistics, since the circumstance that not only political situation but also the technology is shifting that would lead to cross-border substantial economy is more focus on the major goods instead of retail business. This can be explained by the fact that the consumers can get product they interested in on their cellphone through various platform thus the buyer like the supermarket is the more interested in buying large amount of production in order to avoid situation of lack of inventory and save the budget from transport. Such circumstance increases the pressure for logistics enterprise for testing whether they have the capability to delivery such huge amount of product. Besides that, with the impact of E-Commerce has exert lot of traditional merchandise have transform in to the digital form. But even under such circumstance the total freight volume of China cross-border logistics still increases in a fast pace and reach to the top at 2018 when covid-19 hit on the logistic industry. The whole process of substantial economy cross-border logistics can be illustrated up as the chart 1 below.

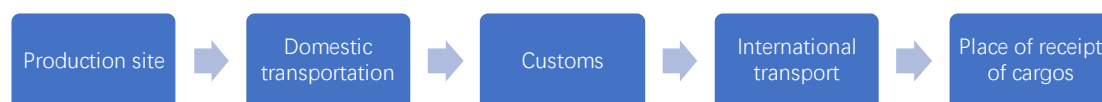


Figure 1. The process of substantial economy cross-border logistics

2.2.2 On-line economy

When it comes to the perspective of E-Commerce the situation has become more complex. Compare with substantial economy on-line economy have much more potential due to the fact that not only customer do not have to physically persuade the buying process. On the contrary they can only use several fingers to place the order from all over the world if they have access to internet. Due to such convenient development the before multinational logistic the shipment is still in China, they would require large warehouse and large container, which the product that later would be transport to the consumer can be organized and preserved. After that they needed to be selected since the products are needed to be transport to all over the world separately. Feather more after the process of shipment complete the products would be reselected in the warehouse near the oversea port for the porous of hand out to next level warehouse. Finally, the production would hand out to the delivery staff to give the products to client. Most of the E-Commerce logistic are mainly focus on the small cargo which have various destination and total volume is considerably high. The hole process of E-Commerce cross-border logistics can be illustrated as the chart 2 below.

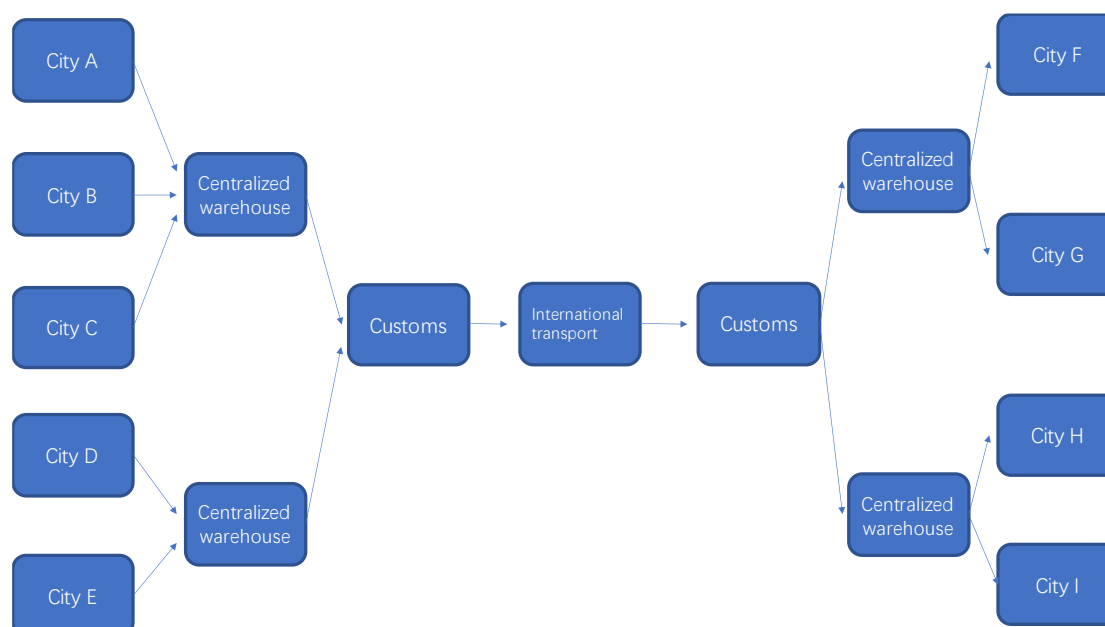


Figure 2. The process of E-Commerce cross-border logistics

3. Situation of cross-border logistic during the covid-19

3.1 The situation in China

3.1.1 Substantial economy

3.1.1.1 Stagnation of collection and transportation

In order to prevent the spread of the epidemic, governments around the world implemented strict traffic control measures. On the one hand, the demand for medical and disaster relief materials distribution surged, and it was difficult for freight drivers and field employees to return to work after returning to work in isolation, resulting in an obvious lack of capacity for logistics enterprises; on the other hand, most production enterprises delayed the start of work, and many logistics enterprises had no goods to transport after resuming work. In some places, it is explicitly stipulated that vehicles not related to epidemic prevention will be impounded, and some places even directly shut off water and electricity to transit centers, which makes it difficult for logistics industry to carry out business normally.

3.1.1.2 Cost increase for enterprises

Affected by the epidemic, the operating costs of courier logistics enterprises have increased significantly, the internal prevention and control of enterprises and front-line personnel on the job require the purchase of large quantities of protective materials, and the labor costs of employees around the quarantine period still need to be normal expenses, for example, a franchise-based courier enterprises only directly managed system of 59,000 employees monthly payroll totaling more than 300 million yuan, and the total number of employees across the network more than 400,000 people, huge pressure on labor costs [8].

3.1.2 On-line economy

Because of the impact of the epidemic on transportation and production, it also has an effect on e-commerce. Customers will consider whether the goods can be dispatched and delivered on time. Many people think that the epidemic will have little impact on e-commerce. Due to the epidemic, customers will spend less time offline and more online, which will instead promote the development of e-commerce business. In fact, the e-commerce industry is also affected by the impact of the epidemic, because the e-commerce industry is dependent on the development of efficient logistics industry, due to the spread of the epidemic, the various sealing control areas are increasingly strict control, there is an epidemic in the local courier business to varying degrees of suspension, stop receiving and sending services, there are goods can not send the situation. After the outbreak of an epidemic in a courier transit station, the postal service was more strictly controlled than before, and the local government issued a notice calling on people to minimize online shopping to prevent the risk of the epidemic. This exacerbated the stagnation of postal services.

3.2 The situation oversea

At the time of late 2019 a strong disease has infected the world with fast speed and high infection rate. Such diseases not only can be spread by the interact between human but also would infect the people who receive package which carry the virus. Due to such circumstance the cargoes are going to be detected and eliminated the virus in both sides of customs. For these who work in the customs the daily routine would increase the possibility of getting disease. Thus, some of policy has been established due to such circumstance. For instance, the staff are suggested to get quarantine for the early state of covid-19 period in order to wait the policy to be established and minimum the risk of getting disease or spread it.

3.2.1 Substantial economy

When it comes to the situation of substantial economy during the covid-19 period it is worse than the situation before the covid-19 period. This can be explained by the fact that lot of enterprise has been affect by virus and the policy established by government regulate them to shut down the factory in order to slow down the process of virus been spreading. Under such circumstance the need of material for the production process would be decrease dramatically. Besides that, covid-19 has cut down the desire for people to travel to other country. In another word, the policy of transnational epidemic prevention measures not only stop the business process by cut down the number of business transnational exchange but also slow the process of merchandise processing during the transport. Thus, the major consumer of China cross-border logistic form both manufacturer industry and traditional energy industry would not be the strong supporter for any longer during the covid-19 period.

3.2.2 On-line economy

When it comes to the situation of E-Commerce during the covid-19 period the need of cross-border logistic have been soar noticeably. Due to the fact that in the early period of covid-19 the epidemic prevention and control measures suggest people to reduce the frequency of going in to public area. That would lead to people to reduce the frequency to get daily necessities in physical retailer in the same time the on-line shopping takes the chance of large amount of people stay at home to develop

themselves by letting the people to understand the service they can offer. Such action has enlarged the size of their customer group but also give the development of themselves a boost. However, the problem has exerted under such development. With the increase of the needs from all over the world the need for the container and the logistic service also increases in a fast pace. However, the total logistics carrying capacity cannot rise without the increase of logistics carriers, leading to the strain of logistics resources and the extension of waiting process. On top of it, in terms of overseas warehouses, the increase in storage costs caused by the prolonged time of overall cargo sorting and order processing has also become a major reason for the increase in the cost of international cross-border logistics. What is more, according to the essay 《Operational environment challenges and countermeasures for international freight forwarding enterprises in the post-epidemic era》 from Xie Fang the biggest challenge stems from the COVID-19 pandemic in 2020, congestion in the Suez Canal in the first half of 2021, and multiple outbreaks of new variants of the epidemic in India and other countries, which resulted in poor collection and distribution at major international ports. Affected by the epidemic, countries and regions have adopted certain prevention and control measures and additional health requirements for people, baggage, goods, containers, vehicles, articles and postal parcels at international ports. The inspection and quarantine of international moving goods has been stricter. Besides increasing the number of cargo inspections and setting up epidemic prevention and disinfection procedures, the protection measures for logistics personnel have been increased. The shortage of logistics personnel at ports with severe epidemics and the intensification of conflicts between ports and trade unions have reduced the overall service efficiency of ports to varying degrees. In recent years, with the booming international trade, all ports and airports are facing old and updated equipment. The epidemic has intensified the problems and contradictions existing in ports, and exacerbated the poor collection and distribution and low efficiency of international ports. [9]

4. Suggestion and notification on the future development of cross-border logistics

4.1 Suggestion for China mainland logistics

4.1.1 Strengthen the construction of domestic logistics network

Integrate regional and urban logistics organization functions, plan and develop and build modern logistics parks, logistics centers, transport yards and other logistics infrastructure, and accelerate the transformation of old logistics parks.

4.1.2 Enhance resource utilization

Improve the integration of resources and comprehensive use of facilities, and actively try to strengthen the cooperation of various modes of transport in the organization of transport, the implementation of integrated transport and storage operations, etc., so that enterprises to further improve efficiency, reduce costs and improve services.

4.1.3 Reinforce collaborative relationships with peers

Increase the support of logistics enterprises warehousing land, project investment in the appropriate integration of private enterprises, so that private enterprises can be more involved in the construction of local economic development.

4.1.4 Strengthen the enterprise's own capabilities

Enterprises need to strengthen their own planning, clear future development, investment direction, pay attention to professional training and talent introduction mechanism, improve the sense of innovation and brand awareness, improve their own soft power. Accelerate the training of logistics talents, encourage cooperation between universities, colleges, research institutions and enterprises, strengthen vocational skills education, and train application-oriented talents with strong operational

ability. Establish channels to actively cooperate with foreign logistics education and training institutions, learn advanced logistics technology and logistics management experience, and comprehensively improve the quality of logistics practitioners [10].

4.2 Suggestion for China cross-border logistic

4.2.1 Improve the overseas warehousing mechanism

The necessity of establishing new overseas warehouses has also increased under the premise of the rising cost of cross-border logistics and warehousing. Not only lies in the use of previously owned and put into use of transnational logistics warehouses and transit warehouses. Establish a new cooperative relationship with local partners to establish a new storage management mechanism in the form of investment and other ways to reduce the cost of storage.

4.2.2 Establish digital information processing platform

The significance of establishing a digital information processing platform is not only to facilitate order processing, classify the undelivered orders into destinations, but also to simplify the process of transnational logistics. The establishment of digital information processing platform can also provide a basis for future customs automation. This measure can reduce the participation of manpower and thus reduce the risk of infection and disease as well as reduce the expenditure of manpower costs and speed up the process of cross-border logistics.

4.2.3 Strengthen transnational transport capacity

Due to the epidemic and the current limited conditions in China, coupled with the grounding of a large number of foreign flights and the "closure of the country and the city", resulting in a sharp decline in passenger aircraft business. In order to solve the logistics shortage of international airlines during the epidemic period, China's Civil Aviation Administration actively encouraged passenger airlines to cope with the current situation of insufficient cargo aircraft capacity through the form of "passenger to cargo".[11] Therefore, it will become an inevitable trend for domestic and foreign airlines to adopt the form of "passenger to cargo". Many domestic airlines actively cooperate, quickly carry out the "passenger to cargo" refitting work. By replacing passenger goods with goods, international logistics channels can be opened up and production cuts caused by the sluggish economy of passenger flights can be made up. In addition, the impact of soaring express delivery costs can be reduced.

5. Conclusions

Behind the challenges and impacts brought by COVID-19 are the innovations and opportunities for China's transnational logistics. Whether in the transnational logistics or in the inland logistics is still through the digital process towards unmanned logistics development. In the short term, such development is only to meet the impact of COVID-19, but in the long term, it is paving the way for the development of China's logistics industry. In this essay, by analyzing the situation of international and local logistics before and during the epidemic, the following suggestions are given. In terms of local logistics, closely combine regional and urban logistics organization functions, further plan and develop modern logistics parks, logistics centers, transportation fields and other logistics infrastructure, and then accelerate the transformation of old logistics parks to improve resource integration and comprehensive utilization of facilities. try to strengthen the cooperation of various modes of transportation in the transportation organization, the implementation of transportation and warehousing integration operation and so on. Finally, increase the support for the warehousing land of logistics enterprises, appropriately integrate the project investment of private enterprises, so that private enterprises can participate in the construction of local economic development more. In the international logistics, improve the international logistics warehousing system, establish a digital information processing platform and strengthen the carrying capacity of transnational logistics. After the epidemic, the global industrial structure, global supply chain and economy will be affected. In the

competition for the international logistics market, Chinese logistics should combine the technological innovation of the whole system brought by the transformation of network, information to digital era, and build a new system and system. In the context of globalization and online shopping, international and domestic logistics are bound to play a very important role in the national economy. Therefore, we need to pay close attention to the development of the logistics industry and actively respond to the impact of the epidemic on international and local logistics. And learn from the rich experience and advanced technology and experience of various countries to reduce costs in commercial activities, and strive to improve the logistics system and promote the long-term development of the logistics industry.

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