

# Analysis and Countermeasures of Terminal Logistics Distribution in China's Business District: Take Beijing CBD as an Example

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**Abstract:** China's logistics industry is in the stage of rapid development. There are many problems in the standardization and standardized management of terminal logistics distribution in business districts and communities. Taking China's first-class business center - Beijing CBD as an example, this paper analyzes and discusses the problems existing in the terminal logistics distribution of China's business center through field investigation, as well as the problems existing in the terminal logistics distribution of the business district, such as weak logistics infrastructure, poor logistics traffic control and chaotic Logistics distribution management mode, and puts forward relevant strategic suggestions.

## 1. Introduction

With the development of reform and opening up, Beijing CBD (central business district) has continued to expand its space, optimize its industry, improve its functions and improve its quality. It has basically formed an industrial pattern with international finance as the leader, high-end commerce as the leading and cultural and media industries gathering and developing, and has become the "golden card" of Beijing's opening to the outside world. At the same time, Beijing CBD brings together giants and famous enterprises in finance, information, service, insurance, telecommunications and other industries, so there is a dense population and huge demand for material flow. According to the field investigation of Beijing CBD, there is a large demand for logistics in Beijing CBD area, and there are some problems in end logistics distribution, such as confusion, disorder and miscellaneous. With the construction of industrial coordinated development system in Beijing CBD Central Business District and the strengthening of information infrastructure construction, it is imperative to upgrade logistics intelligence [1]. Therefore, this paper will analyze the current situation of terminal logistics distribution in Beijing CBD, and put forward corresponding countermeasures and suggestions, so as to provide some suggestions and thoughts for promoting the upgrading of intelligent logistics in Beijing CBD and realizing the unified and standardized management of regional logistics in Beijing CBD.

## 2. Overview of Beijing CBD

### 2.1. Overview of Beijing CBD

Beijing CBD (central business district) is an urban functional area with the development of modern service industry as the core. It is located in Chaoyang District, Beijing. The core area of CBD is located in the northeast corner of Guomao Bridge, starting from the East Third Ring Road in the west, Zhizhi road in the East, Guanghua Road in the South and Jianguo Road in the north. It is located at the hub of urban modern comprehensive transportation network, It is the East Wing with great development potential among the "one line and two wings" of the capital economy. The leading industries of Beijing CBD include finance, information, services, insurance, telecommunications and other industries. It is the location of the Chinese headquarters of many of the world's top 500 enterprises [2]. Beijing CBD has become one of the economic operation control

centers in the Asia Pacific region, the distribution base of global economic resources and various production factors, the centralized development base of modern service industry and the international exchange base of economy and culture.

As one of the three major functional areas of the capital's economic development, Beijing central business district should not only comply with the trend of new economic development, but also have the characteristics of the capital, so as to give full play to the advantages and potential of Beijing and Chaoyang District. As a gathering place of international financial functions and modern service industry, Beijing CBD has world-class international conference destination, the first choice for foreign institutions to enter China, the hub of international information communication, Chinese fashion culture communication center and international fashion culture landmark. It has a centralized display area of the capital's modernization and international metropolis [3].

## **2.2. Beijing CBD building information**

The landmark buildings of Beijing CBD include international trade building (phase III), CCTV building, Yintai Center, wealth center, Beijing TV Center, international trade phase III and other high-rise buildings. Among them, there are 19 buildings over 100 meters above the ground, the height of China Zun building is about 500 meters, and the total construction area is about 437000 square meters. The underground space of some buildings has a 5-storey structure, and the underground space of some buildings has a 7-storey structure, and the long-distance underground space of buildings is not connected.

## **2.3. Analysis on the current situation of logistics demand in Beijing CBD**

As Beijing CBD gathers a large number of star hotels, hotels, business office buildings, modern residential areas and many communication venues, its flow of people and vehicles is large. According to the field survey data, the daily population flow in the core area of CBD reaches 150000, the daily average express delivery volume of CBD will reach 140000, and the average daily express delivery volume of each building will reach more than 500. Among them, the daily package volume of China life building is about 200 pieces per day, more can reach 1000 pieces per day, the daily package volume of Zhengda center is about 300 pieces per day, more can reach about 1000 pieces per day, and the daily package volume of CITIC Building is about 400 pieces, more can reach 1200 pieces per day.

Through the practical investigation of Beijing CBD, the daily flow of people in the core area of CBD reaches 150000, the daily average express delivery volume of CBD will reach 140000, and the average daily express delivery volume of each building will reach more than 500. The logistics demand groups in the core area of Beijing CBD mainly include companies, individuals, businesses and logistics distribution enterprises or organizations. The logistics express of Beijing CBD is mainly divided into general express package and real-time logistics. General express package includes e-commerce goods distributed by express companies such as Yuantong, Zhongtong, Shentong, Huitong and Yunda. Real time logistics is the delivery with real-time requirements such as takeout, milk tea and coffee distributed in the same city.

According to the size and timeliness of the express package, the express demand in the core area of Beijing CBD can be divided into ordinary express package and real-time logistics express. Ordinary Express is mainly distributed by express companies such as Yuantong, Zhongtong, Shentong, Huitong and Yunda. Most of the logistics distribution in the building is unified by SF express, but some SF express do not accept the arrival of all express companies, so the express parts of other logistics companies cannot be distributed to the building, You can only squat on the road or sidewalk outside the building area and wait for express receipt. The real-time logistics is the real-time requirements of intra city distribution. There are fixed places outside some CBD buildings to receive takeout. Users need to come out and pick up parts by themselves. In other buildings without fixed places, takeout staff wait for the consignee to go downstairs to pick up meals by the roadside. The distribution efficiency is very low and seriously affects the traffic environment.

The logistics infrastructure of Beijing CBD is relatively backward, and the intelligent application of logistics is relatively weak. Some buildings are equipped with SF service centers to receive

ordinary express parcels, but users need to go downstairs to pick up the goods by themselves; Some buildings cooperate with meituan to set up intelligent meal taking cabinets on B2 floor; For takeout in some buildings, there is a designated waiting and takeout area outside the building. Employees must pick it up at this designated place; Express delivery in some buildings can only be delivered upstairs after security inspection. There are 2 special cargo elevators, and private items are not allowed to be delivered upstairs.

### 3. Current situation of terminal logistics distribution in Beijing CBD

#### 3.1. Beijing CBD terminal logistics distribution mode

With the rapid development of China's logistics industry, logistics express distribution is increasingly pursuing service quality and distribution efficiency. At present, the end logistics distribution modes mainly include door-to-door delivery, crowdsourcing logistics, joint distribution and self delivery mode. Crowdsourcing logistics mode integrates public resources. The couriers in crowdsourcing mode are willing to work part-time according to their own conditions, and can provide door-to-door services for nearby personnel to pick up goods and deliver goods to their homes. Joint distribution is that a designated logistics company contracts all express delivery services and uniformly schedules distribution in the distribution center of the logistics company. In Beijing CBD area, the terminal logistics distribution mode is mainly door-to-door and self delivery mode. The distribution process of Beijing CBD is mainly shown in Figure 1.

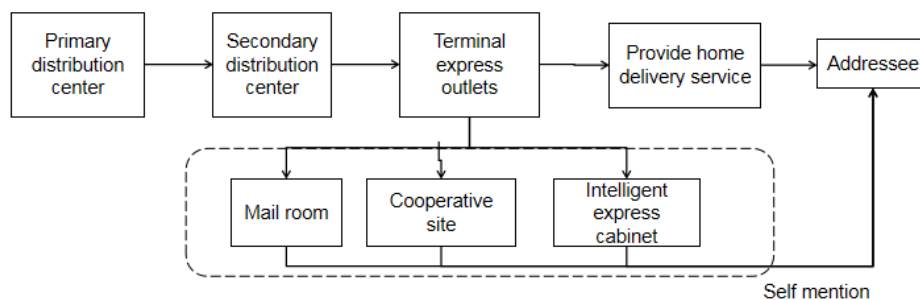


Figure 1 terminal logistics distribution process of Beijing CBD

(1)Door to door delivery mainly includes logistics express enterprises, joint distribution and crowdsourcing logistics. The personnel in Beijing CBD have relatively high requirements for takeout and express delivery. The couriers deliver to each region in the form of small batch and multiple times by tricycle or bicycle. For users, receiving express delivery is convenient and the service is good; For couriers, the workload is large, the distribution frequency is large, the repeated workload is large, and the waiting time is sometimes long; For CBD regional management, a large number of express vehicles and express delivery personnel shuttle in the region, which is not convenient for the management of regional traffic and people flow, interfering with traffic and transportation, but also occupying sidewalks.

(2)The self pick-up mode is that users go to the intelligent express cabinet, mail room or cooperative network to pick up. The usage of Beijing CBD express pick-up mode is shown in Table 1. In the Beijing CBD area, many buildings are equipped with mailrooms and intelligent express cabinets on the basement, and supermarkets around some buildings will also have logistics receiving points. The setting of the receiving and dispatching room needs to occupy a certain space and allocate corresponding staff. The labor cost is high, while the maintenance cost of the express cabinet in the CBD area is high and the utilization rate is low, which makes it difficult to carry out the intelligent express cabinet in the CBD. The distribution of logistics enterprises in the core area of Beijing CBD is shown in Table 2.

Table 1 use of self delivery mode in Beijing CBD

Self lifting mode	Utilization details
Intelligent express cabinet	(1) The intelligent express cabinet is equipped with Fengchao, China Post Express and rookie. (2) The business office area has low coverage and utilization rate. (3) The coverage of residential areas is high, but the utilization rate is low.
Cooperative network	(1) Business office area, no convenience store to provide collection services. (2) In residential areas, there are some convenience stores and third-party distribution. (3) Enterprises provide collection services.
Mail room	(1) Some buildings in the business office area are set on the ground floor, with less business volume. (2) Some residential areas are set up, with large business volume and high utilization rate. (3) The mailroom is set up by the property of the building, and the property bears the labor cost.

### 3.2. Distribution status of Beijing CBD terminal logistics enterprises

The daily express delivery volume per capita in the core area of Beijing CBD is about 1.04 pieces, and the daily express delivery volume per square kilometer is about 83000 pieces; the estimated daily express volume in the region is 580000 pieces. Within the scope of the reform, several express logistics companies are involved to be responsible for the logistics distribution in the region, mainly including express enterprises and e-commerce logistics enterprises, including SF, Yunda, Shentong, Zhongtong, Jingdong and other express companies. The survey results are as follows. Express delivery companies in Beijing CBD area have high frequency of express delivery, large delivery volume and relatively large distribution range.

Table 2 distribution of logistics enterprises in Beijing CBD core area

Enterprise type	Enterprise name	Average daily dispatch times	Number of end outlets serving CBD	Proportion of secondary distribution	Distribution distance from CBD external network point to CBD
Express Enterprise	Yunda	4	There are 2 in CBD and 8 outside CBD	5%	The average distance is 9 kilometers and the maximum distance is 35 kilometers
	Shentong	2	There are 1 in CBD and 1 outside CBD	35%	The average distance is 15 kilometers and the maximum distance is 20 kilometers
	Baishi	2	There are 6 outside CBD	25%	The average distance is 8 kilometers and the maximum distance is 12 kilometers
	Zhongtong	3	There are 1 in CBD and 2 outside CBD	3%	The average distance is 9 kilometers and the maximum distance is 11 kilometers
	Shunfeng	5	There are 9 in CBD and 3 outside CBD	3.8%	The average distance is 1.59 kilometers and the maximum distance is 2.61 kilometers
	Youzheng	3	There are 8 in CBD and	30%	The average distance is

			82outside CBD		3 kilometers and the maximum distance is 5 kilometers
	Yuantong	2-3	There are 2 outside CBD	10%	The average distance is 2.5 kilometers and the maximum distance is 5 kilometers
	Debang	4	There are 1 in CBD and 3 outside CBD	30%	The average distance is 4 kilometers and the maximum distance is 5.4 kilometers
	Juhui	2	There are 3 outside CBD	20%	The average distance is 5 kilometers and the maximum distance is 6 kilometers
	Tiantian	2	There are 3 outside CBD	35%	The average distance is 5 kilometers and the maximum distance is 8 kilometers
E-commerce (logistics) enterprises	JD	3-4	There are 3 in CBD and 1 outside CBD	5%	The average distance is 2 kilometers
	Pinjun	1-2	There are 5outside CBD	30%	The average distance is 2 kilometers and the maximum distance is 6 kilometers
	Suning	2	There are 1 outside CBD	-	-
	Tianmao	2	There are 1 in CBD	-	-

#### 4. Analysis of terminal logistics distribution in Beijing CBD

##### 4.1. Poor logistics and Transportation traffic control

For buildings with parcel storage, logistics parcels can be transported to the interior of the building in large batches by freight vehicles, and the goods can be unloaded at a fixed place for sorting and distribution. For buildings without a package storage place, the express delivery personnel will deliver to each building in turn along the driveway through an electric tricycle, stop at the roadside in front of each building and wait for the owner to go downstairs to pick up the pieces. This distribution mode is inefficient and seriously occupies sidewalks and lanes. When there are many express delivery vehicles, it will seriously affect the transportation and the environmental construction of Beijing business center.

At the same time, the demand for real-time logistics in Beijing CBD area is also large. During the peak period of takeout distribution at noon every day, takeout distributors shuttle between various buildings by electric vehicles, stop at the sidewalk or roadside, and occupy the sidewalk and driveway. As a result, the traffic flow vehicles and freight vehicles overlap, the road traffic jam is serious in peak hours, and the chaotic logistics distribution mode has seriously affected the logistics and transportation efficiency of Beijing CBD transportation network.

##### 4.2. Weak logistics infrastructure

The transportation infrastructure of Beijing CBD has basically formed a transportation system integrating roads, subways, underpasses and sidewalks, but the logistics infrastructure is relatively scattered and has not formed a good connection. First of all, the unreasonable distance between the logistics distribution node and the logistics demand area of Beijing CBD and the failure to fully consider the requirements of enterprise location, business environment, traffic conditions, public facilities, environmental protection and other factors have caused the problems of low efficiency of logistics distribution and high pressure of transportation [4]. Secondly, the vast majority of

buildings in Beijing CBD area are not equipped with logistics receiving points for express delivery, takeout and intra city distribution, resulting in confusion in logistics distribution outside buildings when logistics express delivery to CBD. Finally, Beijing CBD lacks the supporting and use of intelligent logistics facilities, and some buildings have not set up self-service express cabinets and intelligent meal taking cabinets, which is still a certain gap from the intelligent logistics distribution level advocated by China.

#### **4.3. The management mode of logistics distribution is chaotic**

Through the investigation of the core area of Beijing CBD, it is found that the logistics enterprises providing express services for CBD include SF, Yuantong, Zhongtong, Shentong, baishihuitong, Yunda, tmall supermarket, JD, Suning, etc. on average, each express enterprise takes more than 1h to send and receive in a building, and the total number of express delivery is about 100. Therefore, express companies need a lot of repeated work, As a result, the overall logistics operation cost is increased. At the same time, there are a wide variety of express vehicles, resulting in a certain degree of traffic congestion, which has a great impact on the environmental construction and development of the business office area [5].

In addition, according to the survey of distribution enterprises in the second phase of ITC, logistics distribution enterprises can hardly realize the unified distribution of enterprises. The overall distribution rate of enterprises is about 50%, resulting in a great waste of resources of logistics distribution enterprises. At the same time, the scale of distribution is generally small, and most distribution centers do not reach the scale of economic distribution, Most of the personnel and equipment are idle, which greatly limits and restricts the development of logistics distribution enterprises, and greatly reduces the efficiency of logistics distribution.

At the same time, the management mode of Beijing CBD logistics distribution service is inappropriate, which makes the management of various logistics enterprises lack of unified norms. Because different logistics enterprises have their own management standards, and the management standards are inconsistent, it is difficult to unify the management of logistics distribution of major logistics companies. In addition, Beijing CBD property company has unclear division of responsibilities for CBD logistics distribution management and lacks standardized and unified management of CBD logistics distribution, which leads to complex logistics distribution work, low distribution efficiency, high distribution cost and affects the construction of public environment.

### **5. Countermeasures and suggestions on terminal logistics distribution of Beijing CBD**

#### **5.1. Realize the integration of aboveground + underground regional logistics**

With the continuous change of global logistics industry and the gradual development of smart city, logistics has become the core infrastructure of urban development. At present, China's aboveground distribution system is relatively perfect, but with the improvement of people's demand for logistics, the aboveground space is gradually facing the pressure of traffic congestion, traffic safety and high energy consumption. In order to alleviate the pressure on the ground, some cities in China have begun to carry out underground space distribution. The joint distribution form of aboveground and underground space can be built repeatedly, avoid the waste of social resources, make the urban environment more green and environmental protection, and bring more quality urban life to urban residents.

Based on the form of aboveground and underground space in the core area of Beijing CBD [6], As shown in Figure 2, aboveground logistics and transportation can be transferred to underground space. For example, based on the logistics flow and traffic environment of each CBD area, a CBD logistics distribution center is set up in the underground space, and a distribution center is set up in the underground space of each building. The distribution center is used to uniformly receive the goods distributed inward from the periphery of the CBD area, and uniformly sort and transport the goods to the distribution center of each building through the transportation channel in the underground space. Finally, Then, each building distribution center uniformly manages the terminal

logistics distribution of the building. As a result, the logistics integration of above ground and underground areas in CBD can greatly reduce the logistics transportation cost in CBD area, solve the problem of chaotic logistics distribution in CBD area, alleviate the above ground traffic pressure in CBD and solve the traffic congestion caused by logistics transportation [7].



Figure 2 Schematic diagram of underground space in CBD core area

### 5.2. Strengthen the construction of intelligent logistics infrastructure

China's intelligent logistics technology has gradually matured, and the application of 5G, Internet of things, big data and other new technologies in the logistics field has become more and more mature, providing strong support conditions for the integrated development of logistics industry and manufacturing, finance, tourism, commerce and other industries. Vehicle cargo matching and unmanned driving based on artificial intelligence can continuously reduce operating costs and improve transportation efficiency. Intelligent sorting has been deeply applied in the field of warehousing; Big data and cloud computing have played an increasingly important role in logistics investment decisions such as the location of logistics distribution centers through their strong prediction ability. Intelligent logistics technology effectively improves the logistics operation efficiency and reduces the logistics operation cost. It is a good medicine for the logistics industry to reduce cost and increase efficiency. As China's first-class business center, Beijing CBD has dense logistics demand, large logistics demand, and high ground logistics distribution pressure. However, based on the field investigation of Beijing CBD, Beijing CBD is weak in the construction of intelligent logistics equipment, resulting in chaotic logistics distribution and high traffic pressure in the CBD area. As one of the three major functional areas of the capital's economic development, Beijing CBD should actively respond to the call of China's intelligent logistics to reduce costs and increase efficiency, and do a good job in the demonstration area of intelligent logistics. Therefore, Beijing CBD should strengthen the intelligent logistics infrastructure. For example, all buildings in Beijing CBD should add basic logistics facilities such as self-service express cabinets and takeout storage cabinets, so as to provide effective guarantee for standardized, intelligent and efficient logistics operation and comprehensively improve the intelligent level of logistics in Beijing CBD.

### 5.3. Improve the logistics and distribution management mode of business district

Standardization management is an important feature of modern logistics management. Standardization is required in the process of logistics transportation, loading and unloading and distribution, so as to improve the operation efficiency and quality of the whole process. For the logistics distribution in Beijing CBD area, the distribution process includes logistics branch transportation and end logistics distribution. The operation modes of cargo transportation route, cargo unloading location and cargo distribution mode need to be standardized and standardized management. Therefore, Beijing CBD property company should add the management of Beijing CBD logistics distribution and actively assume the responsibility of the property company in the terminal logistics distribution management. First of all, encourage and strengthen the construction of logistics infrastructure in Beijing CBD, and use advanced new logistics technology to improve

the efficiency of logistics distribution management in Beijing CBD. Secondly, make reasonable layout and unified management of logistics transportation routes, distribution locations and distribution locations in Beijing CBD area, realize the integration of aboveground and underground logistics, and standardize the logistics transportation and unloading in this area. Finally, strengthen the management of logistics distribution personnel in Beijing CBD area, reduce unnecessary or repeated labor costs, and formulate the distribution personnel management system in and out of each building to reduce the interference of distribution personnel to the office building area.

## 6. Conclusion

This paper aims to highlight the problems existing in the terminal logistics distribution in the development of China's logistics industry by analyzing the problems existing in the terminal logistics distribution of Beijing CBD, a first-class business center in China. Taking the central business district of Beijing CBD as an example, this paper systematically analyzes the problems of poor logistics traffic control, poor logistics infrastructure and chaotic logistics distribution management mode in the end logistics distribution of Beijing CBD. It also puts forward relevant suggestions for the end logistics distribution of Beijing CBD.

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