

# Distribution Service Mode of the Express Terminal Outlets

## A Case Study of a Certain Area in Beijing

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**Abstract**—Based on the investigation of express terminal outlets in a certain area of Beijing, the article aims to improve the quality of express delivery services, and conducts research on the terminal distribution mode, which is the most direct way for express industry to contact users. Through the analysis of the distribution and application characteristics of each distribution mode, considering the opinions of users, the corresponding countermeasures and suggestions are given to both the express delivery enterprises and the government in view of the current situation of terminal distribution. The article also provides reference for the innovation of express delivery mode.

**Keywords**—Mode; Investigation; Area function; Express terminal outlets; Delivery

### I. INTRODUCTION

With the rapid development of information technology, China's e-commerce has gradually become a new bright spot for economic growth. At the same time, the express delivery industry has always maintained a continuous development trend. According to the "Statistical Bulletin of Postal Industry Development 2017" issued by the State Post Bureau, in 2017, China's express delivery business exceeded 40 billion for the first time, reaching 40.06 billion pieces, up 28% year-on-year; express business income was 495.7 billion yuan, up 24.7% year-on-year; the annual per capita express usage was 28.8 pieces, and the annual per capita express expenditure was 356.6 yuan. In 2017, the express delivery business in Beijing grew rapidly. The total volume of express service enterprises in the year was 2.28 billion pieces, an increase of 16.03% year-on-year; the business income totaled 30.38 billion yuan, an increase of 18.42%. From 2011 to 2017, Beijing express business volume and business income and its growth rate are shown in figure 1 and figure 2.

The rapid development of the express delivery industry has created new possibilities for economic growth and has become an important industry for the development of China's new economy, and has had a tremendous impact on all aspects of daily life. The express delivery industry transports goods from warehouses to various places, undergoes multiple links in warehouse transportation, and finally reaches the users through end-delivery. Express delivery at the end of the

express has become the most direct link between the express industry and the user.

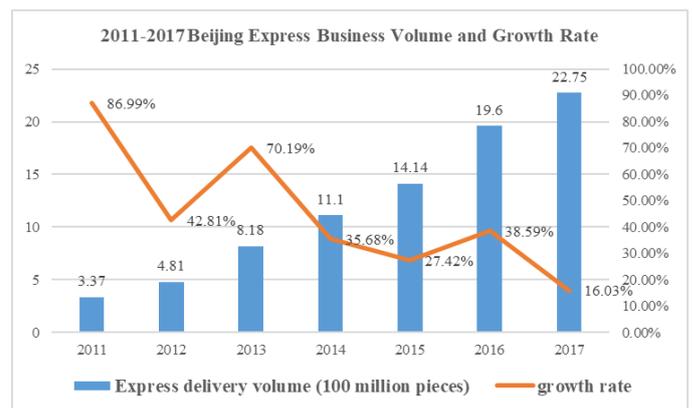


Fig. 1 2011- 2017 Beijing Express Business Volume and Growth Rate

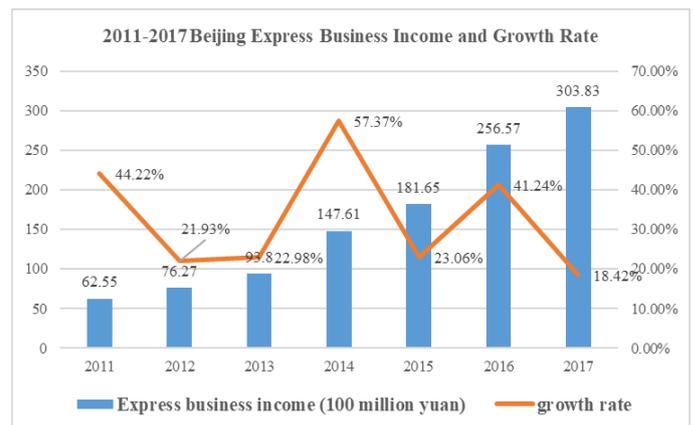


Fig.2 2011- 2017 Beijing Express Business income and Growth Rate

At the same time, as the volume of express parcels continues to increase, the pressure on express delivery in the final delivery is also increasing. In order to improve the development level of the express industry, promote the transformation and upgrading of the industry, and improve the user experience, it is urgent to carry out research on the current status of urban express delivery methods and propose corresponding development countermeasures and suggestions.

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As one of the main administrative regions of Beijing, the region is rich in functional areas. It is of great significance to study the current situation of express terminal distribution mode for improving the development level of express terminal distribution in the express industry [1].

**II. CURRENT STATUS OF RESEARCH ON EXPRESS DELIVERY**

At present, domestic and foreign scholars have conducted a lot of research on the end delivery of express. Ducret (2014) provided an analysis of some of the driving forces and explored the renewed relationships between stakeholders and local authorities in Europe cities on parcel delivery supply and demand[1]. Eleonora (2014) explained the status of PP networks in the end-delivery sector in French and analysis the strategy of pickup point network operators[3]. From the perspective of e-commerce, Johan(2014) analyzed the impact of home delivery, and discussed the options for more sustainable home delivery[4]. Yulia(2018) adopt the customer value perspective to investigate and provided insight into consumers' perceptions of parcel lockers[5]. Miroslaw(2016) thought the problem of the last mile can be solved for the benefit of the environment through solutions called parcel machines[6]. Stanislaw(2016) found that the most important factor of efficiency of parcel lockers is the proper location of the machines used for deliveries[7]. Jaroslaw(2014) taking the example of Poland to pointed out that the role of local governments in the development of city logistics[8]. J.H.R.(2016) summarized the factors that can improve the delivery efficiency[9].

It can be found that scholars have done a lot of research on improving the efficiency of express delivery, and at the same time discussing the express delivery mode, but the research content is concentrated in one aspect. This paper will conduct a comparative study on the delivery of the end of the express delivery, and analyze the end distribution mode according to the functional differences of the distribution area.

**III. ANALYSIS OF THE END DELIVERY MODE OF EXPRESS DELIVERY IN DIFFERENT FUNCTIONAL AREAS**

According to the survey, the end of the express delivery market in the region directly serves 24 universities and 1243 communities, office buildings and other customers. There are differences in the characteristics of different functional areas, and the delivery mode at the end of express delivery is also different.

*A. Analysis of the Distribution Mode of University District*

The universities in the region cover a large area, and many teachers and students live here. This also makes the distribution of universities in the region representative. The survey found that the average daily dispatch volume of universities reached 12.9% of the total amount in the region, which played a pivotal role in the express delivery market. A large number of campus express delivery needs to be handled, and a good delivery method can improve the efficiency of express delivery. Through the investigation of 24 universities in the region, it was found that the distribution methods of the

end outlets included four types: intelligent express cabinet, express terminal outlets delivery, courier designated location delivery and door-to-door delivery [10].

1) *Intelligent express cabinet*: The intelligent express cabinet can effectively alleviate the situation of campus express delivery, so that teachers and students can pick up the pieces at any time, but only 11 colleges and universities install intelligent express cabinets to handle the end delivery, and the coverage rate does not reach 50%.

2) *Express terminal outlets delivery*: Most universities allow express companies or third-party distribution companies to enter the campus to set up express terminal outlets, and the users go to the express outlets to pick up the parce;

3) *Courier designated location delivery*: On and off campus, the courier designated the location for express delivery. Almost all schools are allowed to set up points for express delivery, but the distribution of pickup points has seriously affected the traffic, campus environment, and reduced customer satisfaction with express delivery services.

4) *Door-to-door delivery*: In universities, the main users of express delivery are students and teachers. Home delivery is a common means of express delivery, and most schools allow this type of existence. But this distribution mode is convenient for users and also increases the security risks of the campus.

Campus users, express delivery companies and schools evaluate the four models separately. The results are shown in table 1:

TABLE I. EVALUATION OF EXPRESS DELIVERY

	The campus users	Universities	Express delivery companies
<b>Intelligent express cabinet</b>	Convenience	Manageable	Low cost
<b>Express terminal outlets receiving</b>	A bit convenient	Manageable, partly affecting campus traffic and campus security	High cost of construction
<b>Courier designated delivery location</b>	Inconvenient	Impact on the perception of the campus, poor campus order	Time-consuming and costly
<b>Door-to-door distribution</b>	Convenience	Difficult to manage, posing a threat to campus security	Takes a lot of manpower, time and cost

It can be found from table 1 that only the intelligent express cabinet mode can better meet the needs of users, schools and enterprises at the same time.

*B. Analysis of distribution modes in other functional areas*

In addition to the university area, the area has a total of 1243 industrial parks, communities, administrative agencies, hospitals and office buildings. Through research, it is found that the distribution method is consistent with the main methods of university distribution, but according to the functional differences, there are still some differences. In the

same functional area, multiple end-of-sale methods often coexist.

In the industrial park, the proportion of collection points is large. In order to facilitate management, most of the enterprises in the park have their own express collection points. In addition, in order to avoid congestion and chaos, the industrial parks without express delivery points often specify a special express tricycle parking area, which is convenient for the courier to deliver the express delivery at the designated location. Convenience store collection, door-to-door delivery and intelligent express cabinet mode are less used [11].

The most common express delivery model for administrative agencies is delivery at designated locations, reaching more than 60%. There are also some administrative agencies that allow couriers to deliver goods at home, but more than one-third of the administrative agencies that allow door-to-door delivery are only allowed to deliver large items. And in order to ensure the safety of personnel, couriers are required to register when they enter the administrative agency.

Office buildings are common in various commercial and residential areas. Most of them have relatively complete property management. At the same time, there are many enterprises in the office building, and different enterprises have different attitudes towards express delivery. Through investigation, it is found that door-to-door delivery and pick-ups at designated locations account for the vast majority of office buildings. In addition, the property company is also a common way of picking up pieces. Office staff are highly accepting new things, and the proportion of pick-ups from convenience stores and supermarkets is similar.

The community is mainly residential, with 58% of home delivery methods. For the elderly, the mode of door-to-door delivery provides great convenience for their daily lives. In addition, the property company and the pick-up of the designated location in the community are also frequently used. At present, the intelligent express cabinets are also appearing in the community, which is convenient for office workers who are only stay at home at night.

Hospital express delivery is mainly based on property company collection and door-to-door delivery. At the same time, there are some hospitals that do not allow home delivery, in which case the hospital express delivery is mostly in the form of pick-up at the designated location.

#### IV. ANALYSIS OF DELIVERY METHODS OF EXPRESS TERMINAL OUTLETS

According to the survey results, the main distribution mode of the express terminal outlets includes the property company collection, the door-to-door delivery, the intelligent express cabinets, and the courier designated location delivery.

##### *A. Intelligent express cabinet*

The intelligent express cabinet is more balanced among several methods, which is beneficial to management, convenient for users, flexible in pick-up time, and small space requirement.

In the residential community, the popularity of intelligent express cabinet is slightly better, and the cabinet is generally placed in places with large traffic, such as community gates or squares, and a small part is placed in the property building or in the express terminal outlets within the community.

In these non-residential office buildings, the intelligent express cabinets still need to be popularized. They are also placed in places with large traffic, such as in the office building hall or at the entrance of the building. In some office buildings, express terminal outlets are set up, and intelligent express cabinets are placed directly in the distribution outlets.

However, there are still some cases in the community where the intelligent express cabinet is rarely used, it can be seen that the intelligent express cabinet is still a relatively new thing for residents and property companies.

Although it can improve the experience of people's collection and improve the delivery efficiency to a certain extent, it can't completely change the traditional express delivery method, and its popularization is still very long, and it will also face problems such as limited volume.

##### *B. Courier designated location delivery*

At present, the designated location pick-up is the one with the lowest management cost, and the courier's designated location is widely used. This method is used frequently in industrial parks, administrative agencies, office buildings, communities, and hospitals.

In some areas, special areas for express delivery are designated when planning for construction. But meanwhile, it is also the most inconvenient for the user. It often needs to run far to the door of the community or office building to take the express delivery. A large amount of express delivery on the roadside will cause traffic jam and will also affect the image of the community.

##### *C. Door-to-door delivery*

The industrial park is not allowed to pay the largest proportion of home delivery. The reason is that allowing outsiders to enter the office building at work time is not conducive to management, and it will also affect the working environment and work efficiency.

In contrast, most residential areas allow home delivery, whether it is bulk delivery or valuable delivery, users usually choose the delivery address at home.

The convenience of home delivery to the user can be better reflected in the community, even if some of the strict management of the community, registration, or accompanied by the property company management staff to send the door to the door is allowed to deliver. Therefore, door-to-door delivery is more common in the community.

In addition, when large cargo is delivered, users require more door-to-door delivery. This kind of delivery is usually allowed in various areas.

But it is relatively inflexible in time. The external delivery personnel entering and leaving the office building and the residential building also increase the safety hazard and increase the management cost.

*D. The collection of the property company*

The collection of the property company is more convenient for the user, and there is no time limit for the express delivery. At present, the collection of property companies is more common in industrial parks, residential quarters and hospitals. This type accounts for more than half of industrial parks and hospitals, and there are few office buildings and residential quarters. Less than 11% of the administrative agencies can collect.

Property companies that provide collection services do not charge fees. They are only used as a community service. They are usually kept by the security room or the mail room when the owner is not at home. And there are also community service centers that have set up pickup points and intelligent express cabinets that are managed by property staff.

80% of the reasons why the property company does not provide collection is not willing to bear the risk of package damage and loss. More than 70% of the property companies believe that the collection will face the problem of package accumulation.

In addition to the collection of property companies, there are also convenience stores that operate express delivery services in some communities. Such convenience stores generally use the surplus space in the store to collect and charge the express. The collection of express is usually based on small items, and the large-sized express delivery often requires additional fees.

In addition, there are some special express delivery methods. For example, some residential property companies only collect the express delivery of the property employees, and do not collect the express delivery of the residents in the community. Because of the very small number of such collection methods, no special analysis is done.

V. USER SATISFACTION ANALYSIS OF THE EXPRESS TERMINAL DELIVERY METHOD

Through the research on the user, according to the user's use of the express status, the opinion of the end express delivery method is provided to provide support for improving the end delivery experience of the user.

*A. The most desirable mode to delivery*

It is found that over 50% of users' most desirable delivery

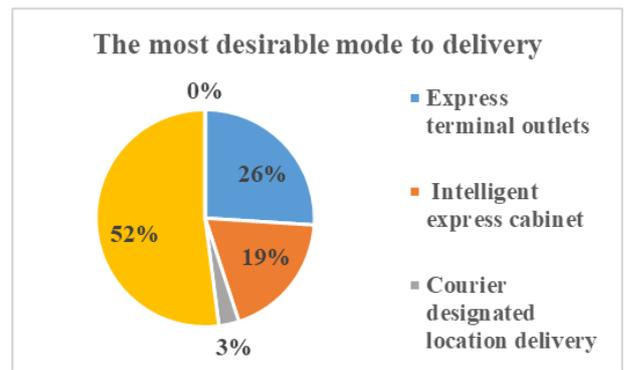


Fig.3 the most desirable mode to delivery

modes are door-to-door delivery, followed by store-sending and intelligent express cabinets. Users pay more attention to

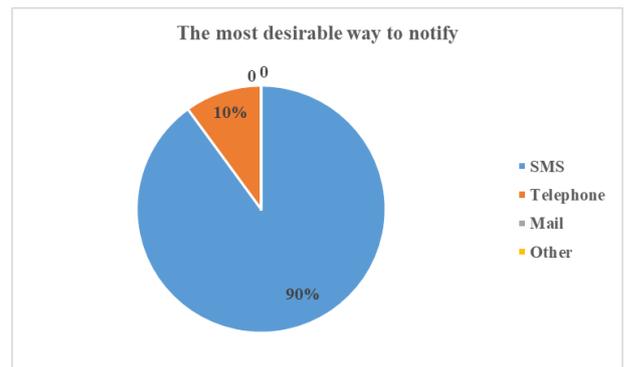


Fig.4 the most desirable way to notify

convenience in the delivery mode.

*B. The most desirable way to notify*

The most preferred method for receiving notifications by users is SMS, followed by phone notification. The user is satisfied with the existing courier notification method.

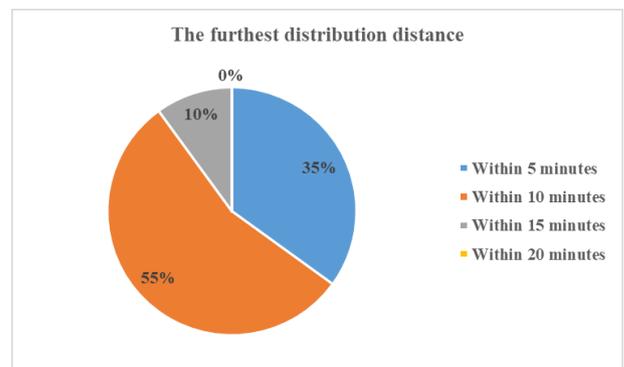


Fig.5 the furthest distribution distance

### C. The furthest distribution distance

More than half of the users can accept the farthest delivery distance within 10 minutes. When the delivery distance exceeds 15 minutes, the user cannot stand it. This result is of great significance for the optimization of the end distribution mode.

## VI. SUGGESTIONS FOR THE EXPRESS DELIVERY COMPANIES AND THE GOVERNMENT IN THE REGION

Through the analysis of the distribution mode of the urban express terminal outlets in the region, the following suggestions are given to the express delivery enterprise and the government for the delivery status of the express terminal outlets delivery.

### A. Suggestions for express delivery companies

1) *Explore the different distribution methods in different functional areas.* According to the difference of regional functions, users and types of express delivery, express delivery enterprises should combine their own development plans, formulate corresponding end-delivery models, provide differentiated services to users, and improve user experience to promote enterprise development.

2) *Explore new ways of "last kilometer" collaboration.* Enterprises should take the initiative to explore cooperation methods with end-distribution third-party organizations, property companies and convenience stores, to promote the standardization of terminal delivery and improve the efficiency of terminal express delivery.

3) *Focus on user needs.* Express delivery companies should actively communicate with users, improve the enterprise express delivery planning from the user's point of view, and then improve the industry management level, and ensure the quality of delivery services at the terminal express delivery.

### B. Suggestions for the government

1) *Leading the city's terminal express distribution system.* The government should promote the cooperation of express delivery enterprises, promote the construction of green end-service modes, and build a city-end express delivery system with standardized services.

2) *Enhance the planning of land for express delivery.* The government should arrange the express delivery service center at the end of the express delivery, build the supporting facilities for the end delivery of express delivery, allocate legal land for the construction of the express delivery project, and provide corresponding convenience for the delivery service of the express delivery.

3) *Improve the management level of the express delivery industry.* The government should strengthen the management level of the express delivery industry, implement the delivery management specifications for express delivery, standardize management of express delivery vehicles and express delivery personnel, and protect the basic rights and interests of express

delivery practitioners. The government should also provide express delivery training to improve the quality of express delivery personnel and ensure the safety of express delivery.

## VII. CONCLUSION

The article analyzes the characteristics of the distribution mode of the express terminal outlets in different functional areas in a certain area of Beijing, and summarizes the distribution of four common express delivery modes: intelligent express cabinet, courier donated location delivery, door-to-door delivery and the collection of the property company. And puts forward suggestions from the perspective of express delivery enterprises and government. The development of the express delivery industry has greatly facilitated the user's life, but the development of the entire industry requires both the initiative of the express delivery industry and the active support and cooperation of all sectors of our society. In addition to the optimization of the existing distribution model, we also need to actively explore more possible distribution modes.

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