

## **Study on Land-Side Traffic in Shanghaihongqiao Airport**

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**Abstract:** *With the rapid growth of world aviation demand, the land-side traffic pressure of ShanghaiHongqiao airport is increasing day by day, so it is urgent to improve the land-side traffic management of the airport. This paper analyzes the land-side traffic condition of ShanghaiHongqiao airport in detail, expounds the existing problems of land-side traffic, and puts forward suggestions for improving the land-side traffic of Hongqiao airport.*

**Keywords** –Shanghai Hongqiao airport, land-side traffic, traffic management

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Date of Submission: 15-07-2019

Date of acceptance: 31-07-2019

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### **I. Introduction**

The increasing demand of domestic and international aviation makes the passenger throughput of ShanghaiHongqiao airport continue to increase. Although Hongqiao airport continues to improve its infrastructure and management, the land-side traffic system still lags behind the development of airport air transport business to some extent. With the development of Shanghai, the air passenger flow will increase further, and the traffic pressure will become more and more severe. How to improve the operation efficiency of landside traffic in Hongqiao airport and bring more efficient, fast and comfortable traffic service to travelers has become a topic of social concern.

### **II. Passenger Flow Of Landside Traffic In Shanghaihongqiao Airport**

According to the purpose of passenger traffic, the personnel in land-side traffic at Hongqiao airport are divided into three categories: air passengers, airport commuters and other personnel. Air passengers mainly refer to those who depart from the airport or arrive by air, as well as some passengers who need to transit across airports in the same city. Commuters mainly refer to those working in and around the airport, including airport staff, airline staff and those engaged in supporting services around the airport. Other personnel mainly refer to the airport usher, the airport visitors and shopping personnel.

### **III. Basic Mode Of Land-Side Traffic In Shanghaihongqiao Airport**

The land-side traffic pattern of ShanghaiHongqiao airport is as follows: rail transit and airport bus are the link tools between the airport and the main downtown area, while taxi is the supplement of the two public transport modes mentioned above. Long-distance bus is for the city around Shanghai; Parking resources mainly meet the needs of self-drivepassengers.

#### **3.1 Rail traffic**

ShanghaiHongqiao airport is divided into terminal 1 and terminal 2. Subway line 10 is directly connected with terminal 1. Subway line 10 starts from minhang district, runs through changning district, xuhui district, huangpu district, jing'an district, hongkou district, and ends at yangpu district. Subway line 2 is directly connected with terminal 2. Subway line 2 runs from east to west of the city, connecting Hongqiao airport and Pudong airport. The operating time of both rail transit lines is 5:55~22:05.

#### **3.2 Airport bus**

Airport bus plays an important role in passenger transportation. ShanghaiHongqiao airport now has 10 bus routes, including eight during the day and two at night. The operating time and departure interval of each line are shown in table 1 and table 2.

**Table 1** Airport bus schedule of Hongqiao airport terminal 1

Line	Operatingtime	Interval (minute)
807	06:00-23:00	20-30
176	07:00-9:30 17:00-19:30	20

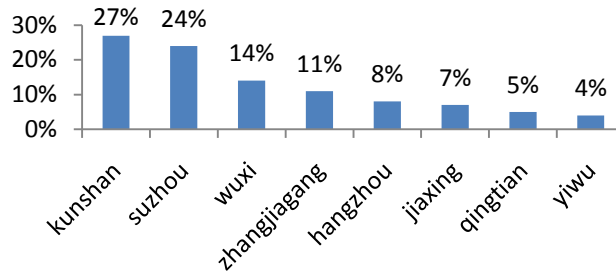
(No service on Saturday, Sunday and national holidays)

**Table 2** Airport bus schedule of Hongqiao airport terminal 2

Line	Operatingtime	Interval (minute)
1 loopline	06:30-20:30	30-40
airport 1 line	06:00-23:00	20-30
941 line	05:30-23:00	20
Hongqiao junction line 4	06:00-23:55	10
Hongqiao junctionline 9	06:00-23:00	20-30
Minhang 18 line	06:00-22:00	20-30
316 midnight line	23:00-5:00	30-40
airport nightbus	22:30-45minutes after the last flight	adjust according to passenger flow

### 3.3 Long-distance bus

Long-distance bus routes of ShanghaiHongqiao airport mainly cover kunshan, suzhou, wuxi, zhangjiagang, hangzhou, jiaxing, qingtian and yiwu in Jiangsu and Zhejiang provinces. It can be seen that most of the passengers of the long-distance bus routes are from suzhou and hangzhou, as shown in figure 1.



**Figure 1** proportion of passenger destination on long-distance bus routes

### 3.4 Taxi

ShanghaiHongqiao airport is located in changning district, about 13 kilometers away from the city center. For travelers, speed is the most important consideration, followed by reliability and price. Taxis have a great advantage over other modes of transportation in terms of speed, so it is also the main means of transportation for passengers to and from ShanghaiHongqiao airport. Especially late at night, taxis are the uppermost way for passengers to get to and from the airport, as most of other landside transportation is out of service.

### 3.5 Private cars

Arriving and leaving the airport by private car is also the way of passenger flow in and out of Hongqiao airport. Hongqiao airport terminal 1 has two parking lots, which are free of charge for the first 20 minutes. P1 parking lot is located at the east side of terminal 1. It is a small car parking lot with a total of 613 parking spaces. P2 parking lot is located at the south side of terminal 1. It is a parking lot for large cars and small cars, with 33 parking spaces for large cars and 145 parking spaces for small cars.

Car parks of Terminal 2 are located on the north and south sides of the traffic center connected to terminal 2. Free parking is for the first 20 minutes. There are two small car parking lots, P6 and P7, and two large car parking lots, P5 and P8. There are 2780 parking spaces in P6 and P7 garages, and 130 parking spaces for large and medium-sized car in P5 and P8 parking lots.

## IV. Problems Existing In The Land-Side Traffic Management Of Shanghaihongqiao Airport

Through investigation and interview, the problems existing in the land-side public transport management of Shanghai Hongqiao airport are summarized as follows:

### 4.1 No north-south rail transit

Shanghai Hongqiao airport has metro line 10 and line 2. However, these two subway lines are east-west lines, not north-south lines. This makes it impossible for passengers on the north and south sides of Shanghai Hongqiao airport to reach the airport by rail, reducing the competitiveness of public transport. ShanghaiHongqiao airport is located in Hongqiao business district. The north and south of the core area of Hongqiao business district are mature developed areas. The north side of the core area of Hongqiao business district is jiangqiao area of

jiading district. The south side of the core area of Hongqiao business district is qibao area of minhang district. ShanghaiHongqiao airport is located in the middle of the north and south core area of Hongqiao business district, which makes the traffic pressure in this area, which is already crowded, even greater.

#### **4.2 Few public transportation resources at night**

ShanghaiHongqiao airport has metro line 2 and metro line 10, both of which operate from 5:55 to 22:05. To calculate the time it takes for passengers to get off the plane to pick up their luggage and walk to the platform, it takes about 20 minutes for passengers on domestic flights, and about 40 minutes for passengers on international flights, who have to go through customs and other formalities. That means only domestic passengers arriving before 21:45 and international passengers arriving before 21:25 can leave the airport by subway line.

Public transport services at the airport operating after 23:00 are airport night bus and 316 midnight line. Airport night bus is the main transport channel between Hongqiao airport and Pudong airport at present, but it only has 3 stations, which is not very convenient for passengers who are destined between Hongqiao airport and Pudong airport. 316 midnight line is the night bus from ShanghaiHongqiao airport to the downtown, but if destination of passengers is not downtown, they can only take a taxi to leave the airport.

#### **4.3 Hidden dangers in the management of taxi industry**

At present, most of the rental vehicles operated in ShanghaiHongqiao airport is operated by joining, linking or buying out. Many taxi drivers do not follow the industry rules, especially from some small taxi companies, and it is difficult to implement regulations on drivers. The threshold of the taxi industry is generally low, and many taxi drivers are not well educated. In recent years, the proportion of migrant workers engaged in the taxi industry in Shanghai is also increasing, which makes the composition of Shanghai taxi workers become very complicated. However, the rising oil price and the high cost of taxi management have caused the rising operating cost of taxi, which has brought great pressure to taxi drivers. Because of the above reasons, drivers often argue with passengers and refuse to load because of profit problems. For example, because a passenger's destination is too close, many taxi drivers will often have bad service or even take a detour to charge more fare. Because taxi drivers often have to wait in long lines in the taxi waiting area of the airport, if the destination of passengers is too close, it will greatly reduce the operating profit of taxi drivers.

### **V. Countermeasures to improve the land-side traffic management of ShanghaiHongqiao airport**

#### **5.1 Building smart public transportation systems**

##### **5.1.1 Bus first**

As a subsystem of large urban traffic, airport land-side traffic should follow the general law of sustainable urban traffic development: to establish a collection and distribution system dominated by public transportation. Public transportation, especially rail transit, has the advantages of large volume, fast speed, low cost, less pollution and low land area. ShanghaiHongqiao airport should make full use of the city's intelligent public transport system, release public transport information widely, provide convenience for passengers, improve the attractiveness of public transport, and cultivate public transport users.

##### **5.1.2 Build passenger information system**

The passenger flow of the airport is instantaneous and unbalanced in space and time, so it is necessary to build a passenger information system to help the landside traffic system of the airport improve static traffic guidance and establish a comprehensive information sharing platform. The information sharing platform can analyze and accurately predict the flow characteristics of airport passenger flow, release dynamic flow information accurately, guide the flow of people and traffic flow in a timely manner, and timely and appropriately adjust the traffic operation.

#### **5.2 Improve public transport services**

##### **5.2.1 Improve rail transit services**

The improvement of rail transit service level is mainly aimed at the above-mentioned problems of north-south rail transit and short night service time. This paper argues that the current rail transit in ShanghaiHongqiao area is in urgent need of increasing north-south lines. It is unreasonable that there is no north-south rail transit line in the area with such a large population flow. At present, if passengers want to take the rail transit from Hongqiao airport to jiading, songjiang, minhang and other surrounding areas, they have to take the rail transit to the urban area first and then transfer from the urban area, which greatly increases the travel time and cost of passengers, and also brings great traffic pressure to the landside traffic of the airport. If the rail transit lines can be added, the rail transit from Hongqiao airport to the surrounding areas can be direct, so that it will be a lot more convenient, greatly improve the satisfaction of passengers. Rail services will also need to be extended to meet the demand for night flights.

### **5.2.2 Upgrade airport bus services**

To improve the service level of airport buses, it can start from two aspects: one is to improve the waiting room environment, improve the supporting hardware facilities, improve the design of the station and surrounding roads, set up special lanes and parking lots to facilitate transfer by other means of transportation, build comfortable waiting room and humanized service facilities such as newspaper, magazine and water dispenser. The second is to improve the logo system and improve the intelligent information system. Guide signs are set up around the site and within the terminal to provide guidance information. An electronic display screen is set up in the waiting room to provide the airport bus operation, flight and other relevant travel information. Through these measures to improve the station facilities, improve the service level of airport buses, enhance passenger satisfaction, increase the attraction to passengers, and increase the proportion of bus travel.

### **5.3 Improve the taxi industry management system**

#### **5.3.1 Strengthen the building of taxi industrial systems**

The management of taxi industry should be led by the government traffic management department and coordinated by various law enforcement departments, taxi companies and related units in the airport area. To strengthen the industry management is to further standardize the operation behavior of taxi companies, establish a strict access and exit system for taxi practitioners, and strengthen and standardize the service management of taxi operators. There is also a need to strengthen on-site management at taxi storage yards and terminal stations.

#### **5.3.2 Improve the moral quality of employees**

At present, a large part of the taxis operating in ShanghaiHongqiao airport come from small taxi companies. These taxis are generally of poor appearance, with low professional ethics and service level of the drivers, which brings great hidden dangers to the public transportation on the land side of the airport. Therefore, it is urgent to strengthen the education and training of practitioners, improve the moral quality of practitioners, make them comply with traffic safety laws and regulations, and keep the inside and outside of vehicles clean and tidy. Improving the moral quality and service level of taxi workers is the fundamental means to improve airport taxi service.

#### **5.3.3 Intensify efforts to punish illegal vehicles**

Within the airport area, government traffic management departments should actively carry out special rectification actions on the taxi industry. They should intensify the investigation and punishment of illegal rental vehicles. They should conduct thorough rectification of illegal behaviors such as untidy car appearance, refuse to load, bad service attitude, queue jumping, stopping at will, turning around at will, changing lanes at will, over speeding and so on. To improve the ability of road control within the airport area, the above-mentioned behaviors should be strictly managed, detected and dealt with at any time. Meanwhile, taxi practitioners who have committed the above-mentioned behavior will be notified to various taxi companies, and their qualification certificates will be cancelled for those who have repeatedly violated the regulations.

## **VI. Conclusion**

The landside transportation system of airport is an important link between airport and city, which reflects the public transportation management level of a city. ShanghaiHongqiao airport should think deeply and systematically about and design its land-side traffic system, so as to ensure that the land-side traffic system can not only meet the needs of airport operation, but also further promote the integration of airport and city, and enhance the regional pivot field's competitiveness in the international scope.

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\* Lin Yan. " Study on Land-Side Traffic in Shanghaihongqiao Airport". IOSR Journal of Business and Management (IOSR-JBM), Vol. 21, No. 7, 2019, pp. -25-28.