

SWOT Analysis of the Development of Guangzhou Airport Economic Zone

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Abstract. The development of airport economy and the construction of airport economic zone are important targets for promoting the construction of international aviation hubs and are of great significance to the construction of Guangzhou hub cities. Through the SWOT analysis of Guangzhou Airport Economic Zone, the paper points out problems in management system mechanism, land supply and supporting facilities, and proposes measures such as planning aviation hub planning, building airport industrial parks, establishing Guangdong-Hong Kong-Macau airport alliance, and optimizing airspace structure.

Keywords: Guangzhou; Airport Economic Zone; Status; SWOT; Countermeasures.

1. Development Status of Guangzhou Airport Economic Zone

The core of the Guangzhou Airport Economic Zone is Baiyun International Airport, which was officially put into use in August 2004. By the end of 2018, Baiyun Airport's route network has covered more than 200 navigation points around the world, reaching more than 40 countries and regions around the world, with nearly 300 routes, covering most of the major cities in the world.

In 2018, the passenger throughput was nearly 70 million, which ranks 13th in the world, including 17.3 million international passenger throughputs.

At present, with Baiyun Airport as the core, a number of aviation-related enterprises have been gathered in the Guangzhou Airport Economic Zone, such as the airline headquarters represented by China Southern Airlines, and the aviation logistics enterprises represented by FedEx and SF, with GAMECO and STAG as the representative of aviation maintenance enterprises.

As a representative of the cross-border e-commerce enterprises represented by IZP and Yi Jiangnan, the financial leasing enterprises represented by Dongfeng South Financial Leasing and Guangdong Green Financial Holding Group, took the initial form of the industrial chain.

2. SWOT Analysis of the Development of Guangzhou Airport Economic Zone

2.1 The Advantages of Guangzhou Airport Economic Zone (S)

2.1.1 Traffic Location

The Airport Economic Zone is in the northern part of megacity-Guangzhou. It is the core of the Guangdong-Hong Kong-Macao Greater Bay Area. Seven high-speed highways such as the Airport Highway and the G1501 Expressway pass through it. Metro lines such as Guangzhou Metro Line 3 and Line 9 run through it.

The Airport Economic Zone is within 60 km of Qingyuan and Foshan, and the expressway is very convenient. The airport is a two-hour flight from Shanghai and Xi'an, and a three-hour flight from Beijing and major Southeast Asian countries. Obviously, it has great advantages of traffic location.

Table 1. SWOT Analysis Table for the Development of Guangzhou Airport Economic Zone

Strengths	Weakness
(1) Traffic location (2) Natural environment (3) Government policy (4) Airport enterprises (5) Hinterland economy	(1) Management system and mechanism are rigid (2) Insufficient land supply (3) Lack of supporting facilities (4) The weak foundation of aviation manufacturing
Opportunities	Threats
(1) "One Belt, One Road" strategy implementation (2) Establishment of Guangdong Free Trade Zone (3) The Airport Economic Demonstration Zone was approved (4) Construction of Guangdong-Hong Kong-Macao Greater Bay Area	(1) Rapid development of other modes of transportation (2) Modern service industry has just started (3) Competition of adjacent airport (4) Restrictions of airspace and navigation rights

2.1.2 Natural Environment

In the 116 square kilometers area of Guangzhou Airport Economic Zone, there are no mountains and low valleys, which are basically plains and hills, and the terrain is very flat.

The Airport Economic Zone is adjacent to Guangzhou's mother river—Liuxi River. The airport is rich in vegetation, with fresh air, birds and flowers, which is suitable geographical and ecological conditions of the airport choosing.

2.1.3 Government Policy

The Guangzhou Municipal Government has given policy support to the development of the airport economic zone from the aspects of headquarters economic settlement, scale operation contribution, special fund support, and introduction of high-end talents.

In August 2017, the Guangzhou Airport Economic Zone launched a “7+1” series of incentive policies for enterprises and individuals who entered the company, including high-end manufacturing, modern services, cross-border e-commerce, and financial leasing.[1] The various preferential policies promulgated by the government have attracted more industries and talents related to the airport, forming agglomeration effects in the airport economic zone.

2.1.4 Airport Enterprise

In 2009, the FedEx Asia-Pacific Transit Center officially opened at Baiyun Airport. At present, more than 70 airlines such as China Southern Airlines, Longhao Airlines, China Eastern Airlines, 9 Air Co., Ltd. and Qatar Airways have settled in the Guangzhou Airport Economic Zone. At present, nearly 800 companies have registered in the Guangzhou Airport Economic Zone. Among them, Guangdong YT Business Aviation Service Co., Ltd is fully arranging the entire industrial chain of business aviation services, building a business aviation service network, and striving to become a "domestic leading, world-class" business aviation integrated service provider. It can be said that the gathering of many well-known airport enterprises in the airport economic zone will help the division of the airport industry to form a complete aviation industry chain and enhance the competitiveness of the Guangzhou International Aviation Hub.

2.1.5 Hinterland Economy

The main radiation range of Guangzhou Airport Economic Zone is the Pearl River Delta, Guangdong-Hong Kong-Macao Greater Bay Area, and it also has a certain influence on the Pan-Pearl River Delta region.

The Pearl River Delta is the one of regions that has the most active economic developments in China, GDP of which accounts for more than 85% of Guangdong Province. And it has laid out industries with high aviation directivity such as textiles and clothing, electronic information, biomedicine, aviation parts and jewelry. Guangdong-Hong Kong-Macao Greater Bay Area has a total area of 56,000 square kilometers, a total population of 66 million, an economic scale of over 140 million yuan, and a total foreign trade volume of over 1.8 trillion yuan, which is equivalent to the

world's 12th largest economy. In 2018, the passenger throughput of Guangdong, Hong Kong and Macau airports totaled 213 million passengers, and Guangzhou counterpart accounted for one-third of the total.

2.2 The Weakness of Guangzhou Airport Economic Zone (W)

2.2.1 Management System and Mechanism are Rigid

Taking China Southern Airlines as an example, its main base is located at Baiyun Airport, with the largest number of transport aircraft and the most developed route network. China Southern Airlines is a state-owned enterprise directly under the Civil Aviation Administration of China. It is not under the jurisdiction of the local government, and its general manager is at the bureau level. Guangzhou Baiyun International Airport Co., Ltd., which operates Baiyun International Airport, is a state-owned enterprise directly under the Guangdong Airport Management Group. The administrative level of the general manager is the deputy department level.

At the same time, the Guangzhou Airport Economic Zone Management Committee, which is responsible for the unified management of the Airport Economic Zone, belongs to the dispatching agency of the Guangzhou Municipal Government, and the administrative level of the Airport Committee is the deputy department level.

Due to the different departments and administrative level. The administrative level of the Guangzhou Airport Administration is at the same level or slightly lower than other major institutions in the Airport Economic Zone. As a result, the management communication and coordination of airport-related matters are not smooth enough. The unified management mechanism for the airport economy in the true sense is still forming a run-in.

2.2.2 Insufficient Land Supply

The Guangzhou Airport Economic Zone has a total area of 116.069 square kilometers, of which Southern Airlines and Baiyun International Airport covers an area of 41.64 square kilometers.

The Airport Economic Zone involves 18 administrative villages in the four streets of Baiyunhuadu. The existing non-construction land is 17,763,800 square meters, the construction land is 24.31 million square meters, and the village construction land is 4,350,600 square meters. At present, there is less land available for development.

There are only 20 registered cultural relics units in the Baiyun Airport area. According to the recent development, the newly acquired land will be 11.55 million square meters. However, the land acquisition and demolition are difficult and costly. The demolition and resettlement tasks are heavy, and the land consolidation time is long.

The phenomenon of illegal construction of villagers in the vicinity has been repeatedly banned, and the supply of land cannot meet the needs of settlement of some high-end airport projects.

2.2.3 Lack of Supporting Facilities

There are several parking lots that are far away from the departure and arrival halls. It takes 10-20 minutes to walk, which causes violations to occur when parking in high-speed emergency lanes.

Due to the large traffic volume, traffic jams can often be seen in the Guangzhou Airport Expressway northbound direction during holidays and peak hours, causing passengers to miss the departure time.

In addition, high-speed rail transfer is difficult. It takes 70 minutes from Guangzhou South Railway Station to take the subway to Baiyun International Airport, and it takes more than 1 hour to take the high-speed train. From Guangzhou North Railway Station to Baiyun International Airport, not only does it take more than 30 minutes of driving through expressway, there are also very few high-speed trains that stop at Guangzhou North Railway Station. [2]

2.2.4 The Weak Foundation of Aviation Manufacturing

The construction of an international aviation hub needs to be supported by industries such as aviation manufacturing and aviation maintenance with high directivity and high technology content.

At present, there are very few backbone enterprises related to aviation manufacturing in Guangzhou Airport Economic Zone. The existing ones are mainly concentrated in the aviation maintenance industry. For example, YT Airlines can carry out regular inspection as well as maintenance and modification of helicopters, and "Customer Reform" carried out by STAG, it also includes that GAMECO overhaul the Airbus A380 and so on.

In contrast, the Tianjin Airport Economic Zone has the aircraft assembly of the Airbus A320 and the aircraft assembly of the China Commercial Aircraft C919 are possessed by Shanghai Airport Economic Zone.

It can be said that the Guangzhou Airport Economic Zone is currently weak since aviation manufacturing such as aircraft design, aircraft assembly and aircraft spare parts.

2.3 The Opportunities of Guangzhou Airport Economic Zone (O)

2.3.1 "One Belt, One Road" Strategy Implementation

In 2013, President Xi Jinping proposed the strategic concept of "One Belt, One Road".

In March 2015, the "Vision and Action for Promoting the Joint Construction of the Silk Road Economic Belt and the 21st Century Maritime Silk Road" clearly pointed out that it is necessary to strengthen the construction of Guangzhou port city and strengthen the function of Guangzhou's international hub airport.

Under this opportunity, with the implementation of the "One Belt, One Road" strategy, Guangzhou must not only become an international shipping hub, but also become an international aviation hub. It must increase infrastructure investment in the airport economic zone and improve customs clearance and expand the international route network and promote the continuous upgrading of the airport industry. [3]

2.3.2 Establishment of Guangdong Free Trade Zone

In December 2014, the Guangdong Free Trade Zone was formally established with the approval of the State Council.

The open innovation of the Free Trade Zone will closely link Guangdong with the countries or regions along the "Belt and Road" strategy and improve the level of Guangzhou's opening and promote bilateral investment and trade with countries and regions along the route.

With the further strengthening of high-end business and trade cooperation, the continuous increase in the volume of import and export of goods will bring more passengers and goods to the Guangzhou Airport Economic Zone.

In addition, the Guangdong Free Trade Zone is positioned as an important hub for the "21st Century Maritime Silk Road", which will not only further strengthen the connection between the seaport and the airport but also promote sea-air and air transportation and trade facilitation. It will also accelerate the development of the airport economic zone.

2.3.3 The Airport Economic Demonstration Zone was Approved

In January 2017, the National Development and Reform Commission and the National Civil Aviation Administration agreed to establish the Guangzhou Airport Economic Demonstration Zone.

The successful approval of the demonstration zone is conducive to enhancing the international competitiveness of Guangzhou Baiyun International Airport as a global aviation hub, which also help to drive the Pearl River Delta to participate in the global industrial division of labor at a higher level and in a wider field. It is estimated that Baiyun Airport passenger traffic and cargo handling capacity will reach 80 million passengers by 2020 and 2.5 million tons respectively. By 2025, Baiyun Airport passenger traffic and cargo handling capacity will reach 90 million person-times and 3 million tons respectively. [4]

The public service system in the demonstration area was established and improved, the ecological environment was significantly improved, and the industry closely related to the airport economy was accelerated, and the status of the airport hub was significantly improved.

2.3.4 Construction of Guangdong-Hong Kong-Macao Greater Bay Area

In March 2017, Premier Li Keqiang proposed in the government work report that the state should study and formulate the urban agglomeration development plan for Guangdong, Hong Kong and Macau.

In July 2017, the “Deepening Guangdong-Hong Kong-Macao Cooperation to Promote the Construction of the Greater Bay Area Framework Agreement” was signed in Hong Kong. According to the agreement, Guangdong, Hong Kong and Macao will build a world-class Bay Area and a world-class city group with the support of the Central Government.

In the future, it will become a new growth pole for the Chinese economy.

As the core city of Guangdong, Hong Kong and Macao's Greater Bay Area, Guangzhou's hub role will be further strengthened. The airport economic zone will undoubtedly play an important role in it. The latter will attract more investment, more high-end talents and enterprises, which helps the construction of the Guangdong, Hong Kong and Macao Bay Area.

2.4 The Threats of Guangzhou Airport Economic Zone (T)

2.4.1 Rapid Development of Other Modes of Transportation

As far as the expressway is concerned, the current national highway has a mileage of 136,500 kilometers. The national highway has covered about 98% of the cities with a population of more than 200,000, and the density of the road network is still increasing. As for the high-speed rail, in the past five years, China's high-speed rail mileage has increased from less than 10,000 kilometers to 22,000 kilometers.

From Guangzhou, taking the high-speed rail will cost 4 hours to Wuhan, Nanning, Guiyang, 7 hours to Shanghai, 10 hours to Lanzhou, Beijing. At present, some high-speed rail operating speeds can reach 350 km / h and high-speed maglev trains with a speed of 600 km per hour have begun to be developed.

High-speed railways have plenty of advantages such as high frequency, low fares and punctuality in short- and medium-haul journeys, which produce a strong competitiveness in the development of airport economy with air transportation as the core.

2.4.2 Modern Service Industry has Just Started

The construction of the “One Belt, One Road” strategic hub city is inseparable from the support of the modern service industry. At present, although the headquarters of China Southern Airlines, Jiuyuan Airlines, Longhao Airlines, GAMECO and other companies have settled in the Guangzhou Airport Economic Zone, there are still few Fortune 500 companies. The Guangzhou Airport Headquarters Economic Park is in the process of construction, and the headquarters economy has just started. A large international convention and exhibition center has not been established near the Guangzhou Airport Economic Zone. The venue facilities are insufficient. The distance and cost advantages of the airport compared to the Pazhou International Exhibition Center and the Baiyun International Convention Center are not reflected.

In addition, the development of high-end service industries, including creative animation, financial leasing, health care, R&D design, intermediary services, and international business, also lags the construction goals of Guangzhou International Aviation Hub.

2.4.3 Competition of Adjacent Airport

At present, the Pearl River Delta region has five major airports, including Guangzhou, Shenzhen, Foshan, Zhuhai and Huizhou, all within 200 kilometers, and the airport is densely distributed. In 2018, the passenger throughput of Shenzhen Baoan International Airport was nearly 50 million passengers. Compared with 2013, the passenger traffic increased by 20 million passengers, closely following Guangzhou. In 2018, the passenger flow of Zhuhai Airport reached 11.22 million which is four times more than 10 years ago. Zhuhai has a national aviation industry base and holds the China International Aerospace Exhibition every two years. Its general aviation industry has a certain influence in the country. In addition, the nearby Hong Kong airport is a competitor to airport in Guangzhou.

The Pearl River Delta Airport (Gaoming) and Guangzhou Second Airport (Zengcheng) will be built between 2017 and 2020, which will further intensify competition with the Guangzhou Airport Economic Zone.

2.4.4 Restrictions of Airspace and Navigation Rights

At present, Baiyun International Airport has several large and small airports nearby, and the airspace resources are quite tight.

Airport flight schedules are very tight, and new routes are more difficult, and passenger and cargo throughput are therefore limited. Although the peak hourly capacity of Baiyun International Airport has increased from 65 to 71, it has a certain increase potential compared with 88 flights per hour at Beijing Capital International Airport, 186 flights per hour at Chicago Airport, and 222 flights per hour at Atlanta Airport. Baiyun International Airport built a third runway, but due to airspace restrictions, the runway is difficult to fully utilize.

In addition, 80% of China's airspace is still military, Baiyun International Airport is surrounded by the village airport (military), Foshan Shadi Airport (military and civilian use), Huizhou Pingtan Airport (military and civilian use), civil aviation use airspace needs to communicate with the military coordination.

3. Suggestions for the Development of Guangzhou Airport Economic Zone

3.1 Rationalize the Airport Management System and Prepare Aviation Hub Planning

In the management system, it is proposed to establish the Guangzhou Airport Economic Coordination Group, with the secretary of the municipal party committee and the mayor as the team leader and deputy team leader respectively.

The Coordination Group regularly organizes the Guangzhou Airport Economic Development Coordination Meeting to discuss major issues facing the development of the Airport Economic Zone and coordinate the main parties such as China Southern Airlines, Baiyun International Airport and the Baiyun and Huadu Districts where the airport is located. The issue of fragmentation involving areas outside the designated 116 square kilometers of key development zones will be coordinated to facilitate the unified management and operations of the airport economic zone.

At the same time, in the planning, we should further comprehensively formulate Guangzhou International based on the "Guangzhou Airport Economic Zone Master Plan" and the "Three-Year Action Plan for Promoting the Construction of the Guangzhou International Aviation Hub and the Airport Economy Demonstration Zone (2017-2019)".

The Aviation Hub Development Plan implements the "Aviation Hub+" strategy and uses hub planning to drive the continuous development and upgrading of the airport economic zone planning.

3.2 Building an Integrated Transportation Network to Improve the Function of Airport Facilities

In terms of subway, intercity and highway, it is recommended to speed up the GuangQing Intercity High-speed Rail, Guangzhou-Shenzhen-Dongguan Intercity, Guangfo Intercity Loop, Guangzhou North Railway Station to Baiyun International Airport Expressway, and Guangzhou Airport Second Expressway Construction and to build "Baiyun International Airport - Sino-Singapore Guangzhou Knowledge City - Guangzhou East Railway Station - Nansha", "Baiyun International Airport - Guangzhou North Railway Station - Guangzhou Railway Station - Guangzhou South Railway Station - Nansha" high-speed subway to connect with Guangzhou International Innovation Hub, Guangzhou International Shipping hub. [5] In terms of the airport, it is necessary to speed up the construction and start-up of the T2 terminal building, and at the same time, do the preparatory work for the construction of the T3 and T4 terminals (Guangzhou North Station) and the 4th and 5th runways of the Baiyun International Airport, and strive to complete it within 5 years. In terms of supporting facilities, it is recommended to build a three-dimensional parking garage near the airport avenue and the airport south subway station to increase more parking spaces and improve the security inspection passage,

joint inspection passage, baggage carousel, apron and other supporting facilities, and use unmanned technology. On the other hand, it's also feasible to take passengers to and from the parking lot, departure hall and arrival hall.

In addition, the parking spots of shared car and shared bicycle can be set up at the airport parking lot to facilitate passengers' travel.

3.3 Building an Airport Industrial Park and Developing a Cluster of Airport Industry

It is necessary to advance the planning and construction of the FedEx Asia-Pacific Transit Center supporting industrial park, and develop aviation logistics, aviation material distribution, bonded processing, precision instrument manufacturing, jewelry processing, aircraft maintenance, business trade, and high-tech projects relying on aviation to purchase raw materials and distribution products. It is necessary to give full play to the tax policy advantages of international aviation hubs and attract well-known enterprises such as Australia, New Zealand and South Korea to set up experience centers, shopping centers and exhibition halls in the Guangzhou Airport Economic Zone. In addition, equipment manufacturing industrial parks (such as Jianggao Town), health industrial parks (such as Zhongluotan Town), and leisure and creative industrial parks (such as Taiping Town) can be set up around the Guangzhou Airport Economic Zone to try to adopt the "enclave economy".

In addition, equipment manufacturing industrial parks (such as Jianggao Town), health industrial parks (such as Zhongluotan Town), and leisure and creative industrial parks (such as Taiping Town) can be set up around the Guangzhou Airport Economic Zone to try to adopt the "enclave economy".

The model cooperates with Qingyuan to set up aircraft assembly, general aviation and aircraft parts manufacturing bases in Qingyuan, and develop industrial clusters of aircraft maintenance, equipment manufacturing, cross-border e-commerce, high-end business, health and leisure.

3.4 Creating a Service Development Environment and Promoting Industrial Service Outsourcing

To create a good airport service hard environment, high-end commercial office buildings can be built near Airport Avenue, Metro Station, Liantang Station, etc., and a large-scale commercial and shopping mall integrating business and hotels will be planned near the Airport Economic Zone to attract multinational companies. Baiyun International Airport can also cooperate with Baiyun International Conference Center to establish Guangzhou Airport International Convention and Exhibition Center near the south part of airport and set up a museum to give full play to the advantages of airport, exhibition, transportation, tourism and business.[6] In addition, in order to achieve optimal use of space, it is necessary to strengthen cooperation with external enterprises and actively encourage service outsourcing of airport industry, and focus on promoting service outsourcing of aviation finance, aviation manufacturing, airport ground handling, information technology and animation and creative industries.

3.5 Accelerate Land Development and Consolidation, Land Acquisition and Resettlement According to Law

It is important to implement the responsible person system for the land development and consolidation project as well as determine the authority and responsibility of the competent department. And implementing the responsibility assessment for the project leader is also vital. [5] It is necessary to do a good job in publicizing the land acquisition and demolition policy of the airport, and to disclose the land development and information in a timely manner in order to obtain the understanding and support of the relocated households.

3.6 Establishing the Guangdong-Hong Kong-Macau Airport Alliance to Rationally Locate Airport Functions

For illegal buildings within the scope of management authority, the Municipal Airport and Port Commission shall organize the land and urban management departments to carry out uninterrupted inspections, strictly monitor and grid management, and dismantle them in time. The land department

should regularly carry out the supervision of the land remediation project, and first arrange the 11.26 square kilometers of land in the airport economic start-up area. It is necessary to set up a relocation time limit bonus and implement a combination of monetary compensation and house compensation, and resettlement takes precedence over demolition.

At the same time, historical buildings and ancestral cultural relics should be properly protected.

3.7 Improve the Living Environment of the Airport and Optimize the Airspace Structure

To improve the living environment of the airport, it is recommended to introduce quality education and medical resources to the Airport Economic Zone. For example, a famous university airport affiliated middle school can be set up, and a famous hospital airport affiliated hospital can be set up. It is also possible to use the landscape environment to build a large-scale nursing home near the Zhuliao Station of Metro Line 14 and along the Liuxi River.

At the same time, near the airport economic zone, it is recommended to build new green parks, urban parks, and improve domestic garbage and sewage treatment as well as optimize water supply, power supply, gas, communication and road networks, and accelerate the construction of underground pipe corridors.

For example, a famous university airport affiliated middle school can be set up, and a famous hospital airport affiliated hospital can be set up. It is also possible to use the landscape environment to build a large-scale nursing home near the Zhuji Station of Metro Line 14 and along the Liuxi River.

At the same time, in the vicinity of the airport economic zone, it is recommended to build new green parks, urban parks, improve domestic garbage and sewage treatment, optimize water supply, power supply, gas, communication and road networks, and accelerate the construction of underground pipe corridors. Landscape upgrades will be carried out on some important roads such as Fanghua Road, Gangtai Road and Airport East Ring Road to achieve environmental purification, beautification, lighting and greening of the airport economic zone

In addition, it is recommended to re-plan the airspace structure in the Pearl River Delta region, communicate with the military in time. It is viable to move Qiancun Airport to a more suitable place and relocate the Foshan Shadi Airport to Gaoming and change the Huizhou Pingtan Airport to a civilian airport.

Optimizing the allocation of resources such as navigation rights, routes, and flight times, and conducting unified management of the airspace of Baiyun International Airport are both important.

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