

Research on the Development Direction and Service Innovation of Foreign-funded Industries in Pudong New Area During COVID-19

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Abstract: In 2020, more than half of the top 100 foreign-invested enterprises in Shanghai came from Pudong. Foreign-invested enterprises have played a supporting role in Shanghai's economic development. The epidemic has a serious impact on foreign-funded enterprises in China, which may lead to the loss of foreign capital. Based on the theory of crisis management and service innovation, this study summarizes the strategic trends of three key industries in Pudong New Area, logistics and transportation, artificial intelligence and semiconductor industries in China, and puts forward the Countermeasures of service innovation based on the service status of Pudong New Area High Tech Park to foreign enterprises.

Keywords: Crisis Management, Service Innovation, Foreign-funded Enterprises, Pudong New Area

1. Introduction

Pudong New Area is the core bearing area for the construction of Shanghai's science and innovation center, with concentrated innovation resources and capacities of high-tech achievements. There are many foreign-funded enterprises, and the government has issued preferential policies for foreign investment for many times. It is a representative area to study the development trend of foreign-funded enterprises in China. Today, Pudong New Area is the gathering place of regional headquarters of multinational corporations. Nearly half of the regional headquarters of multinational corporations in Shanghai are in Pudong. There were more than 600 headquarters enterprises of various types in Pudong New Area in 2021, and the contribution rate of headquarters enterprises to the economy of Pudong New Area exceeded one third [1]. Pudong has formed a multi-level and wide-ranging ecosystem such as regional headquarters of multinational corporations, large enterprise headquarters, operation headquarters, regional headquarters, high growth headquarters and regional headquarters of international organizations (Institutions). In 2018, there were 692 industrial enterprises with foreign investment from Hong Kong, Macao and Taiwan in Pudong New Area, of which 403 were foreign-funded enterprises[2], mainly distributed in general equipment manufacturing, computer communication and other electronic equipment manufacturing, automobile manufacturing, pharmaceutical manufacturing and other industries.

However, since the outbreak of COVID-19, foreign-funded enterprises have been affected as well as domestic enterprises, including blocked flow of people, impeded transportation and logistics, shortage of epidemic prevention materials and delayed supply of raw materials, which has led to difficulties in resuming work and production. At the same time, the epidemic has also exacerbated investors' wait-and-see mentality, putting pressure on the efforts to stabilize the stock and increase investment in 2022, making the situation more complicated and severe.

This paper proposes the following research questions:

- (1) What are the strategic developments of foreign-funded industries in Pudong New Area during the epidemic?
- (2) What service innovation measures should high-tech parks and incubators take or strengthen according to the strategic development trend of foreign-funded enterprises?

This paper carries on the theoretical analysis according to the research question, forms the theoretical model, and makes the preliminary analysis. Secondly, according to the development plan of Pudong New Area, three industries and leading enterprises in these industries are determined. We

collect managers' views on the Chinese market, comments on the policy environment, and views on the U.S. government from our official website and news sites. The company's response to the epidemic and policy environment, requirements for business environment, supply chain and revenue, and the 2019 annual report and the first quarter financial report of 2020 were collected on the official website. At the same time, we used press releases, media interviews and conference comments to supplement the business situation of enterprises and analyze their strategic development trends during the epidemic. At the same time, we interviewed a CEO of a multinational enterprise, two executives from logistics industry, two middle managers from automobile and financial industry, and senior managers from Zhangjiang and Lingang Park to put forward suggestions on how to optimize the business environment for foreign enterprises, further analyze the service innovation of the park, and improve suggestions and countermeasures.

2. Literature Review

2.1. Crisis Response Strategy

COVID-19 is affecting the lives and work of people and organizations around the world. The transmission of COVID-19 not only poses a threat to life and safety, but also poses a significant impact and test to foreign-invested enterprises in China. What we need to pay attention to is how enterprises can effectively cope with the crisis. According to some articles published in SMS journals, Wenzel and other scholars (2020) summarized four strategic countermeasures to deal with the crisis, including retraction, persistence, innovation and exit [3].

Retraction refers to the reduction of enterprise costs, assets, products, product lines and overhead expenses [4]. It is a widely observed strategic countermeasure. In the short term, enterprises can stabilize the decline of performance by reducing their business scope, so as to lay the foundation for strategic renewal. However, in the long run, it may result in a loss of scale, and lose certain resources and costs. Therefore, although the retrenchment strategy is a necessary temporary response to the crisis in the short term, when the crisis lasts for a long time, the continuous retrenchment strategy will result in the limitation of the company's resources, capabilities and culture.

Persistence refers to the measures taken by enterprises to maintain their original business activities in response to the crisis, including the consumption of idle resources and debt financing. Such measures aim to maintain the status quo and mitigate the adverse effects of the crisis [5]. In the face of constantly changing circumstances, a company that adheres to the strategy may outperform its competitors that carry out strategic updates [6]. Because frequent changes in direction will destroy the value of strategic updates and decisively transfer performance advantages to inert organizations that maintain the status quo. Persistence can promote sustainable business survival in the medium term, but this response will be difficult if the crisis lasts for a long time.

Innovation can enable enterprises to explore new choices and expand their business activities and business methods under the uncertain environment. Although the crisis may have a negative impact on enterprises, it also creates new opportunities for the strategic renewal of enterprises. In a sense, innovation can be called the strategic renewal of enterprises to deal with the crisis.

The research of Reymen and other scholars (2015) has a high guiding significance in this aspect. Their research on the causality and consequences of the creation of new risks shows that during the crisis, the increase of environmental uncertainty is conducive to expanding the scope of business activities of enterprises [7]. Specifically, under the uncertain environment, enterprises begin to explore new options, expand their activities to other departments, and reflect on new business methods.

Exit refers to the cessation of business activities in response to the crisis [8]. Unlike bankruptcy, exit is also a valuable strategic decision and a thoughtful strategic response to the crisis. The exit strategy can prevent the major losses that enterprises may face in time.

When discussing the exit mechanism of enterprises, scholars find that the exit rate mainly depends on the degree and type of crisis that enterprises are directly affected by. Companies are less likely to quit when they are dealing with natural disasters, and more likely to quit when they are facing economic turmoil and terrorist attacks [9]. Therefore, although exit will pay a certain price, but is an important basis for the strategic renewal of the enterprise, conducive to the formation of new enterprises.

2.2. Service Innovation

Service innovation is a key theme of service research. Service innovation is usually regarded as the process of acquiring resources, recombining resources and transforming them into new services. By integrating various resources, enterprises can create new resources that are beneficial to certain actors in specific situations [10]. Service innovation is not only incremental and continuous improvement, but also radical and destructive, and finally achieve the leap of customer value [11], so that enterprises can obtain sustainable competitive advantage.

Sustainable competitive advantage depends on the development and introduction of new services [12]. A key factor in the sustainability of competitive advantage is the value allocation based on innovation that competitors cannot imitate. The independent mechanism that cannot be imitated increases the imitation cost and acts as a strong imitation barrier to ensure the continuous excellent performance of the service company.

Several key themes emerged in the literature review of service innovation. The first is the relationship between service innovation and performance. The literature shows that service innovation has a positive impact on performance, so that enterprises can provide value better than competitors. Different from manufacturing innovation, the integration of customers, employees, suppliers and partners in the innovation process is conducive to the performance of service enterprises. Therefore, the growth effect of service innovation is determined by the external links maintained by innovators.

The second is the relationship between service innovation and resources. Resources are particularly important for services, because service innovation begins with the change of resources and the combination of resources. However, in many cases, service innovation occurs in resource constrained environments. We regard resource constraints as the lack of resources needed for innovation [13], including technology, manpower, time, capital, etc. Therefore, Duymedjian and Ruling (2010) proposed the concept of "patchwork"[14], which means that companies are facing resource constraints or have to use limited resources to create greater value for their customers. The ability to reorganize resources mainly includes four ways: proactively respond to resource shortages, utilize available resources, improvise when reorganizing resources, and network with external partners [15].

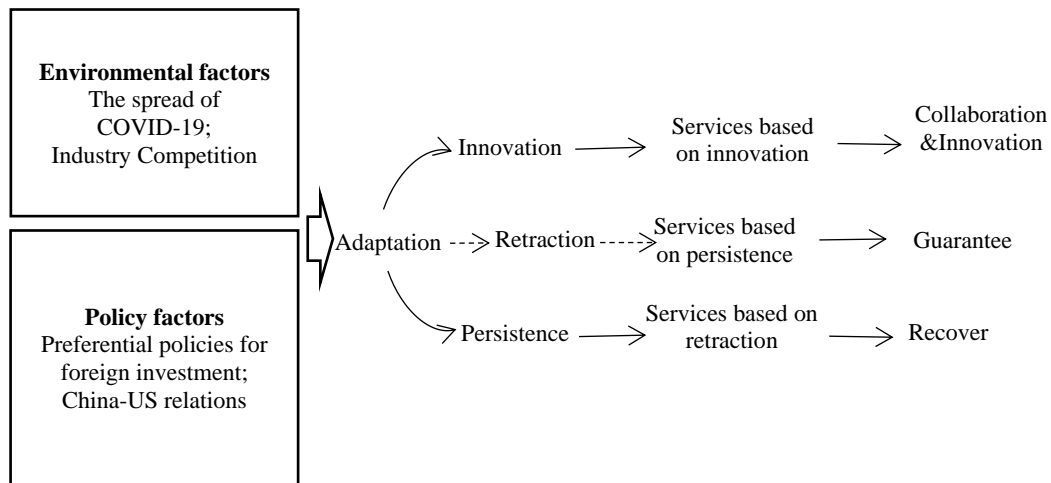


Figure1: Theoretical framework

3. Development Strategies for Foreign-Funded Enterprises in Pudong New Area During the Epidemic

This section will specifically analyze the prevention and control measures and future strategic development direction of each foreign-funded industry in Pudong New Area, and understand the differences among industries.

Table 1: Three industries and typical firms

Industry	Firm
Logistics and Transportation	EXEL Logistics (Shanghai) Co., Ltd., Ltd.
	Schenker (China) Co., Ltd.
	American President Lines (APL) Co., Ltd.
	Beishi Ship Management (China) Co., Ltd.
Artificial Intelligence	Maersk Ship Management Consulting Co., Ltd.
	Fuji Xerox (China) Co., Ltd.
	Corteva Agricultural Technology (Shanghai) Co., Ltd.
	IBM China Co., Ltd.
Semiconductor	Microsoft (China) Co., Ltd.
	ABB (China) Ltd. Shanghai Branch Office
	Micron Semiconductor (Shanghai) Co., Ltd.
	Aisikai Hynix Semiconductor (Shanghai) Co., Ltd.
	Qualcomm Enterprise Management (Shanghai) Co., Ltd.
	NXP Semiconductors Ltd.
	Renesas Technology Co., Ltd.

3.1. Development Strategy of Logistics and Transportation Industry in China

During the epidemic period, the logistics and transportation industry, as the basis of national economic operation, faced many challenges, mainly reflected in the sharp reduction of business demand, shortage of transportation capacity resources, delay in resumption of work and isolation control. However, with the epidemic situation gradually controlled, the temporary downturn in the logistics and transportation industry has been improved.

In terms of epidemic prevention and control, although the goods were stranded due to the labor shortage caused by the epidemic, the huge capital reserves and business response measures made the enterprise business in a stable state. While maintaining stability, the enterprise accelerated the research and development of digital technology for the epidemic. The epidemic situation puts forward new demands for unmanned, intelligent and digital logistics industry, which leads to the thinking and layout of logistics enterprises. In the long run, the development strategy of foreign logistics enterprises in China after the epidemic will show the following trends:

First, increase investment in science and technology to accelerate digital development. Digitization and intelligence is one of the important trends in logistics and transportation in recent years, and the epidemic has clearly accelerated this trend. Online services are becoming a standard part of the industry, and digital technologies such as artificial intelligence, block chain, cloud technology, big data, 5G and Internet of Things are entering a stage of large-scale application in logistics and transportation. Shipping logistics enterprises have launched online inquiry, offline booking, online tracking, online payment platforms. Even during the worst of the pandemic, much of the global supply chain was able to function. Taking Maersk China as an example, For the cash business and telex release business of the counter, the enterprise has launched a new telex release bill of lading, electronic invoice, electronic payment and other online payment and business handling modes, which can truly realize the no-contact service of the counter business, provide customers with better service experience, and reduce the risks in the process of business interaction. Logistics enterprises have become a powerful force in the fight against COVID-19 by building intelligent, automated and visual supply chain and logistics operations through continuous technological input.

Second, pay attention to regional trade and optimize industrial layout. The epidemic has prompted multinational logistics enterprises to rethink their global layout and look for more potential markets. Among them, one belt, one road, and the further expansion and opening up have made the major transnational logistics and transportation enterprises have spawned new routes and trade patterns. Taking KWE for example, it is in line with China's "One Belt, One Road" policy and has launched rail transport business with Europe, Africa and the Middle East.

3.2. Development Strategy of Artificial Intelligence Industry in China

The technology sector has been less affected during the pandemic, and many companies have even gained more opportunities. This is because compared with other industries, the artificial intelligence industry has a higher degree of intelligent production lines, mainly in the form of software and online

services, so it is relatively easy to meet the prevention and control requirements during the epidemic, and telecommuting enables the resumption of work and production more quickly.

Artificial intelligence industry market demand is relatively strong. During the epidemic, artificial intelligence played a great role with its advanced intelligence advantages and played the role of "rebel" in the epidemic. Generally speaking, the development strategy of foreign AI enterprises in China mainly involves two aspects: epidemic prevention and control and vertical industrial layout.

First, in the aspect of epidemic prevention and control, foreign enterprises with AI intelligence will develop new products temporarily in response to the epidemic and continue to extend existing technologies to new application scenarios. While ensuring the safety of employees and customers, ABB tries to serve customers through the Internet and high-tech products, reducing face-to-face communication with customers as much as possible and trying more new ways of communication.

Second, in terms of vertical industrial layout, capital and foreign-funded enterprises actively seek business landing scenarios to assist in technology transformation. Technology landing in the vertical field, then generate new data, promote algorithm update and iteration, and further serve the vertical field. In this way, it is cyclic and continuous development. What these enterprises value most in the market competition is the ease of use of AI, so as to improve the stickiness of users and quickly add new customers. Through the large-scale application during the epidemic period, combined with their own scientific research technology and frontier expansion, many enterprises have not only made breakthrough progress in many key technology fields.

3.3. Development Strategy of Semiconductor Industry in China

As a technology-intensive industry, the semiconductor industry is less affected by the epidemic. The industry as a whole responded positively to the outbreak: companies donated money and epidemic prevention supplies, established a sound epidemic prevention system, and organized employees to delay their return to work and work from home. They are also adjusting their inventories and cores and transforming their technologies during the pandemic.

Industry is subject to greater national diplomatic relations. The trade war between China and the US has, to some extent, affected corporate acquisitions and development. Overall, companies remain confident about the Chinese market despite the impact of the policy. China's semiconductor industry is still in the stage of rapid development, companies in China have rich profit and development space, hope to actively develop the local market, to obtain a higher market share.

The development strategy of Chinese foreign-invested semiconductor enterprises in China mainly involves the following aspects:

First, the system of talent gathering and intellectual property protection should be improved. Although China's semiconductor industry is still in an earlier stage of development than its international competitors, it also means that Chinese semiconductor factories will have significant room for growth. Perfect policies for attracting talents and protecting intellectual property rights can promote the rapid development of the industry. A small number of core personnel are employed with high salaries. Meanwhile, attention is paid to the training of technical personnel, and professional quality training is provided for grass-roots staff and management respectively. Policies on intellectual property protection and patent protection were introduced to provide convenient channels for foreign investment to apply for patents, so as to meet the characteristics of rapid industrial renewal.

Second, we need to form a good investment environment. The United States, Japan and South Korea all rely on preferential policies to guide the investment direction, so that a large number of funds pour into the semiconductor high-tech field, so as to speed up the transformation of industrial structure to knowledge economy. For example, during the three to five-year buffer period after China's accession to the WTO, South Korea will give more preferential and encouraging policies to the semiconductor integrated circuit industry and semiconductor products within the framework of the WTO. Therefore, if the government or high-tech parks need to formulate attractive policies to attract and stabilize foreign-funded enterprises.

4. Service Innovation Measures for High-Tech Parks

Pudong's major industrial parks are the main carriers of multinational corporations. The major industrial parks and incubators represented by Lingang and Zhangjiang High tech industrial parks have

accumulated rich working experience in investment promotion services for foreign-funded enterprises. Therefore, the high-tech park should establish strategic intelligence research on the strategic development direction of domestic and foreign-funded enterprises in the park, predict the development trend of foreign-funded enterprises from the top managers' understanding of the environment, enterprise resources and product service characteristics, so as to retain the development of foreign-funded enterprises in China.

4.1. Services Based on Innovation

Innovation-based services fall into two main modes: collaboration or innovation. Cooperative services refer to exploring new incubation modes through resource integration to promote the innovation of service capabilities of the park, mainly in the following ways:

The epidemic has changed the previous way of offline service in the park and offline Office of enterprises. Advanced network technology has broken through the constraints of space distance. Online office has gradually become a normal for employees, which also makes entrepreneurship incubation develop into online space, that is, cloud incubation. The park needs to pay attention to the integration process between multinational enterprises and local small and medium-sized enterprises when further developing the Chinese market, and encourage typical science and technology incubators with transnational incubation ability to adopt innovative organizational forms such as "cloud incubation" to strengthen the joint development of multinational enterprises and innovative and entrepreneurial enterprises.

Each major industrial park should take the actual scene demand in the development of multinational enterprises as the market cooperation point, with multinational enterprises providing project and technical resources support, incubators providing sites and resources, and small enterprises providing technology and products to jointly complete project innovation and realize the improvement of industrial ecology.

Innovation based services mainly refer to the promotion of the park's own service level and the evolution of relevant policies through the introduction of typical foreign-funded enterprises. The typical case is "Tesla settled in Lingang". Tesla settled in Lingang mainly for two reasons. First, it benefited from the talent and financial resources required by high-tech enterprises in Shanghai. The second is the core competitiveness of the port. The Shanghai municipal government implemented the "double special policy" as early as 2012, creating conditions for talent introduction and project implementation.

4.2. Services Based on Persistence

Service based on persistence means that the park solves the actual needs of incubated enterprises by building perfect Park supporting facilities and service system, so as to realize the close connection between the park and incubated enterprises and make enterprises take root in the park. In the era of innovation and technology driven, the service of high-tech parks and incubators is not only to provide office space for enterprises, but also to create the optimal environment for enterprise development and build an efficient and convenient park ecosystem through systematic hardware facilities and supporting services. When building the supporting and service system, high-tech parks and incubators need to grasp from six aspects: business environment, park environment, social transportation, park service, talent construction and micro management:

(1) From the perspective of business environment, the park needs to formulate the architectural design of the park according to industrial positioning, park planning and enterprise requirements.

(2) The park needs to pay attention to greening construction and improve the image of the park. The park environment needs to pay attention to the treatment of the three wastes. On the one hand, the enterprise pollution discharge needs to implement unified standards and strict supervision; On the other hand, the production standards needed by enterprises are tested to ensure the normal order of enterprise office and production.

(3) The park needs to cooperate with urban planning to build a comprehensive transportation system, open up shuttle buses and routes to meet the needs of employees for commuting and travel.

(4) The park needs to provide good park services, establish a special association of development zone, and support professional teams and investigation teams. On the one hand, it should enhance communication with clients to solve their difficulties. On the other hand, it should coordinate the

development of fire protection and water and electricity safety in the park and provide good service to clients.

(5) The park needs to do a good job in talent exchange, retain local talents, pay attention to the introduction of overseas talents, establish an appropriate salary system and diversified incentive mechanism, and provide incentives including more training opportunities and spiritual rewards.

(6) The park should also provide basic services, such as car maintenance and customer hotline.

4.3. Services based on Retraction

The service based on retreat means that the park retains the enterprises with good development prospects or encourages the enterprises that do not conform to the industrial plan according to the development plan and industrial structure. High-tech zone is rich in resources, the key to retain enterprises is to grasp the actual demand of enterprises. From the perspective of enterprise development, enterprise development strategy, enterprise cost, government policy, talent, investment environment and other aspects are factors that affect enterprises to decide where to settle down.

First of all, from the perspective of enterprise development strategy, the park needs to negotiate with the enterprise headquarters, grasp the general direction of enterprise development, and strive to include the park in the future development of the enterprise.

Secondly, in terms of business environment, the park needs to communicate with enterprises so that enterprises can understand the advantages of settling in the city and the park resources. Take Pudong New Area as an example. The government and the high-tech park attach great importance to building a business environment, leading the country in investment environment, talent development, government services, preferential policies and other areas. With a high degree of internationalization, Shanghai has attracted a large number of high-end talents through the Shanghai relocation policy. The legal system construction is also being further promoted. The transformation of government functions has improved the efficiency of work.

5. Conclusion

We can see that the orientation of foreign enterprises rooted in the Chinese market has not changed. Although some industries have been severely impacted by the epidemic, foreign companies' positioning on the Chinese market has not changed due to their own resource base and the rapid recovery of the Chinese market.

The park should understand the strategic development trend of multinational corporations, adapt to the technological progress and development of multinational corporations, upgrade and optimize the business environment in Pudong in an all-round way. High tech parks and incubators can do the following:

(1) Create a new model of "cloud incubation", encourage typical science and technology incubators with transnational incubation ability to adopt innovative organizational forms such as "cloud incubation", and strengthen the joint development of multinational enterprises and innovative and entrepreneurial enterprises. (2) By introducing typical foreign-funded enterprises, improve the existing investment promotion mode and thinking of the park, and promote the service level of the park and investment promotion team. (3) Build a perfect Park supporting facilities and service system from six aspects: business environment, park environment, social transportation, park service, environmental construction and micro management to meet the actual needs of incubating enterprises. (4) Communicate with enterprises in time, so that enterprises can understand the advantages of settled cities and park resources, grasp the general direction of enterprise development, strive to include the park into the future development of enterprises, and retain enterprises with good development prospects.

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