

Research on Developing a 5G Intelligent Industrial Park at Dongguan Aozhitang Community: A Case Study and Analysis of Urban Planning, Investment Promotion, and Regulatory Challenges

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Abstract: China is on the course to switch its economic mode from mid-low level production to high-tech manufacturing industry. However the construction level of industrial park is still at a primitive stage. This research is to conduct a deep study on the 5G intelligent industrial Park in the case of Dongguan Aozhitang community using different aspects. Inspired by Yin, 47 interviews were executed, including 4 with other competing industrial park operators, 5 with local government offices, and 38 with local manufactures and industry associations. It is concluded that it is of great importance to have a in-depth understanding on investment promotion, urban planning, and regulatory challenges in the developing phase of this industrial park. Future research will address on both the constructing and operating phase. What is more, Developing on the methodological and theoretical framework may also be a possibility to study.

Keywords: Industrial Park; Urban Planning; China; Regulatory Aspect; Investment Promotion

1. Introduction

China is on the way to shift its entire industrial system from mid-low level to high end

manufacturing industry [1,2]. A growing demand on high-end manufacturing commodities and living conditions for customers is reported [3,4]. At the same time, the deduction of Chinese young population has intensified the need of job market on skilled employees, and the vibrant need on export from the western world has escalated this demand [5,6,7,8]. What is more, a rapid economic growth of India and Vietnam is observed, the rise of labor cost in China and the US decoupling policy is also happening [9,10]. Although there is still a great industrial gap of the two countries comparing to China, as well as the rest of world, it is still expected to be the rising competitors in the next decades in terms of international trade [11]. At the moment, there are two major challenges for the Chinese government. The first obstacle is the lack of leading technological enterprises, this is especially obvious comparing to the USA and EU, for instance, the silicon industry. Most of the Chinese mega enterprises are in the field of financial sector like banking industry or retail business, and previously are construction or real estate companies. The second obstacle is that most of industrial lands with development potentials are not in the hands of government or manufacturers, rather being hold by local villages or landlords, making the upgrade of

domestic industrial infrastructures extremely difficult [12]. This scenario is especially apparent in the Guangdong-Hong Kong-Macao Greater Bay Area. The manufacturers are hereby reluctantly to increase the investment on factory facilities and machines to produce high-tech goods, as they are worried to lose the control of their own factories when the lease expires. This situation is even much worse in telecommunication, new materials, and pharmaceutical industries, usually a substantial amount of investment on production space for general manufacturing practice is required. As a matter of fact, the local lease contract is usually signed with the length of 3 to 5 years, which is unable to recover the additional costs from the previous investment. Hence, it is vital to reformulated the ownership of lands to the manufacturers. In addition, providing qualified factory buildings from the urban planning and architectural perspectives is of great importance to the local investment promotion.

One example is the Aozhitang community. It lies in the very heart of Dongguan city, Guangdong, China with the size of 2.14 hectares. As it is widely known that Dongguan is the hub of China producing electrical devices, food especially the biscuits industry. It is only 20 minutes by driving to the outskirts of Guangzhou and Huizhou city, and with additional 40 minutes to both city centers by express way. The transportation to take commercial flight is also very convenient, with 3 international airport nearby. It also has a convenient train service to the inland China and Hongkong. The whole population of this community is 5000, about 80% of the inhabitants are immigrant workers. The size of this project is 0.51 hectare with the construction size of 450000 square meters. The nature of this land is M1 for research and manufacturing with a plot ratio of 3.5. The height of building is controlled within 100 meters. The density is not more than 40%. The local government has expressed their interest to focus on 5G industry, and this community's condition do support this expectation. In addition, the new industrial is expected to attract more talent engineers and workers to settle down in the Aozhitang community. This research is to investigate and develop a 5G intelligent industrial Park from investment promotion, urban planning, and regulatory perspectives using Dongguan Aozhitang community as a case.

2. Methods

The whole research is inspired by Yin [13,14,15]. Data collection method as interviews with manufactures, the local government offices, and industry associations have been conducted. What is more, a field research is planned to be implemented during the investigation. This is to give a comprehensive understanding on the Aozhitang community and its surroundings in terms of different aspects, at the same time acquire an in-depth view on the feedback from interviews. The outcome from data collection is then discussed among the authors to better illustrate the strength and weakness of this intelligent industrial park project.

3. Results and Discussions

Table 1. Type and Number of Interviewees

Type of Interviewees	Number of Interviews
Manufactures and Industry Associations	38
Local Government Offices	5
Competing Industrial Park Operators	4

47 interviews were implemented, including 38 with manufactures and industry associations, 5 with local government offices, and 4 with other competing industrial park operators within 100 kilometers in the Greater Bay Area (GBA). The field research was operated on the understanding of this particular community's geographical location, currently internal investment environment, use of land situation, current status of industrial development, traffic and logistical condition. Several results were found during the investigations.

It is found that 5G and artificial intelligent technology are of interest to the most of manufactures, as well as the local government. This is because of the industrial process that these manufactures at the moment are very primitive. Hence, they need these extra technologies to improve the efficiency of production, cutting off the costs, as well as their status in the whole production process. In addition, it is found that necessary to build an intellectual property and equity transactions platform. At the same time, an exhibition and sales center is required by the most of the interviewees as well. These infrastructures are argued as a good promotion of the new industrial park to attract outside new companies and stimulate the business of existing

manufactures at the same time [16,17]. This is actually not a separate case in Dongguan, as nearly all the manufactures from different industries in the GBA have the similar demand. Dating back to 2000s, Original Equipment Manufacturers(OEM) have played a vital role in the GBA. These OEMs were in the bottom of the whole supply chain and many of them have signed exclusive agreements with the brand holders. Their products have all been pre-ordered according to the contracts with exporters. This constant scenario and ways of thinking have made these OEMs be lack of understanding on property rights exchange and protection, as well as sales management and distribution channels. In another word, these OEMs are just purely makers and they do define themselves in this way, and this is how “made in China” come from. What has reflected in this research is that these OEMs ask for intellectual property development and protection, boosting sales and product exhibition are also needed. It is argued that with better intellectual property protection, financial activities, and exhibitions, these OEMs can be better developed in terms of revenues and profits [18]. This scenario also meet the demand of local government as social appearance. It is argued that this effort hence can better facilitate on the movement of transforming “made in China” to “innovate in China” [19,20]. It is also suggested that the local industrial policies should be adapted into this demand from manufacturers. In addition, it has given the local government and state-owned enterprise to participate in this process as an investor. In return, a significant rise of tax is argued to be expected in the next few years.

What is more, it is found that of all the 11 designated sizable enterprises with annual income over 3 million U.S. dollars are from the traditional fields as furniture, rubber, textile, and metal industries. To be frankly, the temporary industries are outdated and the added value of these particular industries are relatively low. The working conditions for the immigrant workers are also unpleasant, making further employment and expansion challenging. At the same time, these industries are facing fierce competition from India, Vietnam, or countries from Southeast Asia, some from this community as we interviewed have already considered moving their factories there. In addition, the local industry types are diverse

and scattered, each type of enterprise develops independently without forming a sizable cluster with systematic positive industrial effect. In this way, the cost on materials and logistics are relatively high comparing to the competitors in Shenzhen, Guangzhou, Huizhou, and Foshan. Furthermore, due to the lack of education and commercial facilities, recruiting skilled engineers and workers has become relatively difficult. Their children are unable to go to qualified school. Hereby, it is argued that on one way is about improving commercial and education facilities [21,22,23]. On the other hand, it is argued that it is of importance to reorganize the productions in this community, and improve the efficiency. However it should use a market economy approach. One possible option could be attracting some high-end manufactures which face consumer electronics directly, or known as end-user distributors. At the same time, the products of 11 designated sizable enterprises in this community should be suppliers to these high-end manufactures, as many as possible. Furthermore, the newly built factory constructions have to be in comply with the architectural demand [24,25]. The local government is argued to play a role in this process, and collecting taxes during this transition. Only in this way, a systematic and organized regional manufacturing system can be established with formidable profits locally. In addition, several manufactures ask for financial and sales platform inside this industrial park, this is to facilitate cooperation with foundations and marketing companies to stimulate business. This platform can also help these manufactures to find new sales and possible business collaborations.

During the investigation, several enterprises outside this community have shown their interest to rent or purchase property in this project. However, similar to the 11 designated sizable enterprises, they express the customized demand on manufacturing space. However, from the point of view of the community, it is reluctantly to do so, as customization would limit the possibility to other type of industries especially when higher rent occurs. It is suggested that there should be certain policies to support such demand. It could be subsidies to the particular industries, a deduction on taxes would also be an option, as a way to minimize the financial burden of these enterprises. What is more, establishing industry-guiding funds is

suggested, this is to attract manufactures with potentials to move their factories into this community. This is critical for those high-risk innovation companies, and failure in the conquest is very normal and not rarely happening. Moreover, this type of cooperation requires a group of professionals with very high level of understanding on macro economy, industrial policy, and business operation, recruiting amount of descent quality of professional funding managers is suggested. Furthermore, a differential on the industries comparing to Shenzhen is recommended. As it is well-known that Shenzhen has a complete and advanced industrial system, especially in the field of electrical devices and new energy cares as BYD, it is suggested that Dongguan should have the own industrial polices to adapt into local status, not facing directly on the advantage of Shenzhen. In another word, there should be a comprehensive understanding on what Dongguan's real advantages are and find out the opportunities there. Only in this way, a better established industrial system can be developed in Dongguan. In addition, establishing a few universities, colleges, and vocational schools are also required in Dongguan, as this educational and technical strength is what this city is really very much lack of in the previous years. It is argued that this is to build a comprehensive research, innovate, and manufacture flow in this city.

Multiple manufacturers from Guangzhou or Shenzhen have shown their interest to move their factories to the Aozhitang community. However, these enterprises have shown their concern whether the local production chain can fit in their industrial needs. It is argued that this is not an independent case. As the new product emerges, the local industrial system will always be restructured. These manufacturers have also strongly shown their demand to participate into the local business as an exchange to move to Dongguan. The comparison on policies between Dongguan and other cities is argued to be studied deeply.

The State Owned Enterprise(SOE) is also argued to play an important role in developing this industrial park. As it is well-known, there are different policies to be complied in different agencies. The SOEs have natural advantages to these governmental units. At the same time, the financial interest of SOEs is relatively low comparing to private partnership. In addition,

these SOEs are also a very good platform to invite public joint ventures in the development of this project [26,27]. However, the risk control should be taken into serious considerations. At the same time, the relations with local communities and villagers should be balanced and taken a good care of. What is more, the public service ran by the local SOEs is argued to be profitable business, and could be a joint venture with the local township.

China is indeed a great country with a proud history of 5000 years. However it is still young in the modern industrial world. It has already proven that traditional way of capitalism is not working. It is not just about reconstruct of the nation's infrastructural facilities, but also a new way of looking on how to develop the economy in a philological aspect. Surely upgrading the industries is on one hand, on the other hand, how to provide the best livelihood to the nationals is critical as well. We have witnessed the local factory owners express their expectation to improve the living conditions of immigrant workers, to provide better facilities, as a way to keep them stay. It is argued that this is an inspiring progress, as any development comes to the end, is about the people. Although building these facilities will increase the cost of this industrial park, it would make recruitment of workers easier for the factories. This is critical especially for nowadays high-tech industries, as well-trained workers and engineers are far more valuable than the technologies and machines itself. Their domestic livelihood should be considered thoroughly in the development of this new industrial park. This could also be valid for the Chinese new overseas industrial park in other parts of Asia, Africa, and South America [28].

4. Conclusions

A comprehensive study on the design of this 5G Intelligent Industrial Park at Dongguan Aozhitang Community is conducted. Various of barriers and demands are found in this case study. It is concluded that it is necessary to have a deep understanding on urban planning, investment promotion, and regulatory challenges with different stakeholders in this developing phase. Future study will address on the constructing and operating phase. Developing on the theoretical and methodological framework can also be a possibility. It is hoped that the cost of whole

life cycle can be reduced significantly.

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