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A Study on the Patterns of Integration and Development of Advanced Manufacturing Industries in Guangdong, Hong Kong and Macao Greater Bay Area and County Industrial Chains in Guangdong Province under the Rural Revitalisation Strategy

Dongjin He[1], Qianru Tang[2], Lixin Huang[3], Junyan Chen[4], Jiajun Zhou[5], Meiyan Cai[5], Yingmei Li[6,*]

[1] Department of Physical Education, Guangdong University of Finance, China

[2] School of Finance and Investment, Guangdong University of Finance, China

[3] School of Credit Management, Guangdong University of Finance, China

[4] Faculty of Chinese language and culture, Guangdong University of Foreign Studies, China

[5] General Education Department, Southern Medical University, China

[6] Qingyuan Campus, Guangdong University of Finance, China

[*] **Corresponding author**

Abstract: This paper explores the integration and development mode of advanced manufacturing industry in Guangdong, Hong Kong and Macao Greater Bay Area and the industrial chain in Daipo County, Guangdong Province, in the context of rural revitalisation strategy. By analysing the development status quo of advanced manufacturing industry in the Greater Bay Area and the development overview of the industrial chain in Daipo County, the experience and law of the integration and development of the two are summarised. It is found that industrial docking and synergistic development, technological innovation and industrial upgrading, infrastructure construction and public service optimisation are the key factors to promote the integrated development of the industrial chain. Taking Liangxinyuan Industrial Co., Ltd. and Tai Po Industrial Transfer Park as cases, the practical experience and successful practices in their integrated development are analysed in depth. The study shows that the in-depth integration of the industrial chain is of great significance to regional economic development, and can promote the optimal allocation of resources, industrial upgrading and coordinated development of the regional economy. Finally, it proposes the future direction for the continuous deepening of industry chain integration in Tai Po County, which will provide other regions in Guangdong Province with experiences and laws that can be learnt from.

Keywords: Rural revitalization, Guangdong-Hong Kong-Macao Greater Bay Area, Advanced manufacturing, County industry chain, Integrated development.

1. Introduction

1.1. Background of the Study

1.1.1. Implementation of the Rural Revitalisation Strategy

The strategy of rural revitalization is the overall programme for China's work on the three rural areas in the new era, and it is of great practical significance and far-reaching historical significance. The implementation of this strategy is aimed at promoting the economic and social development of rural areas, narrowing the gap between urban and rural areas, and modernising agriculture and rural areas through efforts in the areas of industrial prosperity, ecological livability, civilised rural culture, effective governance, and affluent living. Specifically, the rural revitalisation strategy increases farmers' income by promoting the optimisation and upgrading of the rural industrial structure, facilitating the transformation of traditional agriculture into modern agriculture, and improving the efficiency of agricultural production and the added value of agricultural products. At the same time, it strengthens the construction of rural infrastructure and the provision of public services, improves the rural living environment, and upgrades the quality of life of farmers. In addition, it focuses on rural cultural construction, inherits and carries forward outstanding traditional culture, fosters civilised rural customs, and enhances rural cohesion and centripetal force. Through these measures, the rural revitalisation strategy has injected new impetus into rural economic development and laid a solid foundation for integrated urban and rural development.

1.1.2. Construction of Guangdong, Hong Kong and Macao Greater Bay Area

The construction of the Guangdong-Hong Kong-Macao Greater Bay Area is a major national development strategy, with the objective of creating a first-class Bay Area and a world-class city cluster that is vibrant and internationally competitive. Its strategic positioning includes an international science and technology innovation centre, a globally important manufacturing base, an international financial hub, and a world tourism and leisure centre. By deepening co-operation among Guangdong, Hong Kong and Macao, promoting co-ordinated regional development and building a new open economic system, the construction of the Greater Bay Area aims to achieve regional economic integration and enhance the comprehensive competitiveness of the region.

Specifically, the construction of the Greater Bay Area enhances the quality and effectiveness of regional economic development by strengthening infrastructure connectivity, promoting the free flow of factors, optimising the regional industrial layout, and promoting technological innovation and industrial upgrading. At the same time, it focuses on ecological and environmental protection, promotes green development, and creates a quality living area that is pleasant to live in, work in and visit. The construction of the Greater Bay Area not only has an important driving effect on regional economic development, but also provides a new growth pole for national economic development.

1.1.3. Importance of county economic development

The county economies occupy an important position in the overall economic pattern of Guangdong Province and are an important force in promoting the province's economic development. The level of development of county economies is directly related to the effectiveness of the implementation of the rural revitalisation strategy and to the coordination and sustainability of economic and social development in the province. County economies have unique location advantages and resource endowments, and through the development of special industries, they can effectively promote the local transfer of rural labour force employment, increase farmers' income and promote rural economic and social development. At the same time, the development of the county economy also helps optimise the province's economic layout, narrow the regional development gap and achieve coordinated regional development. In the context of the rural revitalisation strategy, the development of county economies is of great significance in promoting urban-rural integration and the modernisation of agriculture and rural areas.

1.2. Purpose and Significance of The Study

1.2.1. Purpose of the study

This study aims to explore the mode of integration and development of the advanced manufacturing industry in Guangdong, Hong Kong and Macao Greater Bay Area with the county industrial chain in Guangdong Province, using Tai Po County as a case study for in-depth analysis. Through field research, data analysis and other methods, it will summarise the experiences and patterns applicable to other regions in Guangdong Province, and provide reference for promoting the synergistic development of county economy and the economy of the Greater Bay Area. Specifically, the study will analyse the development status and characteristics of the advanced manufacturing industry in the Greater Bay Area, explore the development status and problems of the industrial chain in Tai Po County, study the paths and modes of integrated development between the two, and put forward policy recommendations to promote integrated development.

1.2.2. Significance of the study

This study has important theoretical and practical significance. Theoretically, it enriches the theoretical system of regional economic synergistic development and rural revitalisation strategy by exploring the mode of integration and development of the advanced manufacturing industry and county industry chain in the Greater Bay Area, and provides new perspectives and methods for related research. Practically, the study takes Tai Po County as a case study, and the experiences and laws summarised can provide useful reference for other regions in Guangdong Province to promote the synergistic development of the county economy and the economy of the Greater Bay Area. By promoting the in-depth integration of the county industrial chain with the advanced manufacturing industry in the Greater Bay Area, the development of the county economy can be effectively upgraded to promote the implementation of the rural revitalisation strategy and achieve high-quality development of the regional economy.

2. Current Development of Advanced Manufacturing Industries in Guangdong, Hong Kong and Macao Greater Bay Area

2.1. Industry Size and Structure

2.1.1. Gross manufacturing output

As an important manufacturing base in China, the Guangdong-Hong Kong-Macao Greater Bay Area has a huge gross manufacturing output value, which plays an important supporting role in the development of the regional economy. According to relevant data, the total manufacturing output value of the Guangdong-Hong Kong-Macao Greater Bay Area reaches several trillion yuan in 2022, accounting for a high proportion of the national total manufacturing output value. Specifically, the value added of industry in Guangdong Province will reach 4.8 trillion yuan in 2022, ranking second in the country, with the value added of industry in the nine cities in the Pearl River Delta (PRD) accounting for more than 80% of the province's total. This huge total manufacturing output value not only reflects the strong strength of the Greater Bay Area in manufacturing, but also highlights its important position in the development of the national manufacturing sector. Manufacturing occupies an important share in the economy of the Greater Bay Area. In 2022, the value added of industry in the nine cities of the PRD will account for 38.0% of GDP, much higher than that of other key regions. This share not only reflects the importance of the manufacturing sector in the Greater Bay Area economy, but also its strong contribution to economic growth.

2.1.2. Distribution of major manufacturing industries

The manufacturing industries in the Greater Bay Area of Guangdong, Hong Kong and Macao are widely distributed, forming a few dominant industrial clusters with national and even global competitiveness. Among them, the electronic information industry is one of the pillar industries with the greatest competitive advantages in the Greater Bay Area, with Shenzhen, Dongguan, Huizhou and Guangzhou as the mainstays. Shenzhen and Guangzhou have continued their efforts in R&D, with globally renowned technology companies such as Huawei and Tencent, which are global leaders in areas such as communications equipment, computers and the Internet. Dongguan and Huizhou, on the other hand, have an advantage in the field of smart terminals, forming a complete industrial chain from parts manufacturing to complete machine assembly. For example, Huawei's smartphone production base is in Dongguan, providing many high-quality smart terminal products for the global market. The electrical machinery industry is the second pillar industry in the Greater Bay Area, with a few segments such as home appliances, lighting, and power transmission and distribution equipment developing favourably. The smart home appliance industry in Foshan, Zhongshan and Zhuhai is in a leading position in the country, with famous brands such as Midea and Gree, which not only occupy an important share of the domestic market, but also actively expand into the

international market. The automobile manufacturing industry is large in scale and strong in growth, forming an industrial pattern with vehicle manufacturing in Guangzhou and Shenzhen as the core, and parts and components supporting synergies in Foshan, Zhaoqing and Huizhou. Guangzhou's Guangzhou Automobile Group is an important domestic automobile manufacturer with a complete automobile R&D, production and sales system. BYD in Shenzhen has made remarkable achievements in the field of new energy vehicles and become the world's leading electric vehicle manufacturer.

2.2. Technological Innovation and R&D Capabilities

2.2.1. R&D investment and patent output

As an important highland for technological innovation in China, the Guangdong-Hong Kong-Macao Greater Bay Area has been enhancing its technological innovation and R&D capabilities in the manufacturing sector. In recent years, manufacturing enterprises in the Greater Bay Area have increased their R&D investment to promote technological innovation and product upgrading. According to statistics, the intensity of R&D investment (i.e. the ratio of R&D expenditure to operating revenue) in the manufacturing sector in the Greater Bay Area has been increasing year on year, reaching 3.4 per cent in 2023, which is higher than the level of Germany and Japan in 2022 and close to the level of the United States in 2022. For example, the R&D investment of the whole society in Shenzhen reaches RMB 188.049 billion in 2023, and its proportion of regional GDP is raised to 5.81%, a proportion that has reached the international advanced level. The R&D investment intensity of some key enterprises has even reached the international advanced level. For example, high-tech enterprises such as Huawei have maintained a high proportion of R&D investment for a long time, which has provided a strong guarantee for their technological innovations in areas such as communication equipment and smartphones. Meanwhile, the patent output of the manufacturing industry in the Greater Bay Area has also shown rapid growth, with the number of patents granted and the number of invention patents granted ranking among the top in the country. By the end of 2023, the number of invention patents in force in the Greater Bay Area of Guangdong, Hong Kong and Macao stood at 672,000, a year-on-year increase of 23.2 per cent, accounting for 13.5 per cent of the domestic total. These patents cover a wide range of fields such as electronic information, electrical machinery, new materials, etc., providing a wealth of innovations for technological advancement and industrial upgrading in the manufacturing sector.

2.2.2. Construction of Innovation Platforms and Research Institutions

In order to further enhance the innovation capacity of the manufacturing industry, the Guangdong-Hong Kong-Macao Greater Bay Area has vigorously promoted the construction of innovation platforms and research institutions. A few national and provincial manufacturing innovation centres have been established in the region, such as the National Innovation Centre for High Performance Medical Devices and the Guangdong Intelligent Robotics Research Institute. These innovation centres focus on the research and development of key common technologies and industrial applications, and provide technical support and services to manufacturing enterprises. For example, the National Innovation Centre for New Energy Storage was set up in Guangzhou, focusing on large-capacity, high-security, long-life and high-efficiency large-scale energy storage technologies and equipment. Meanwhile, the Greater Bay Area is also home to many high-level research institutes and institutions of higher learning, such as the Shenzhen Institutes of Advanced Technology of the Chinese Academy of Sciences, the Hong Kong University of Science and Technology, and Sun Yat-sen University. These institutions have strong strengths in basic and applied research, providing a steady stream of intellectual support for technological innovation in the manufacturing industry. For example, the Hong Kong University of Science and Technology is an international leader in research in areas such as artificial intelligence and biotechnology. In addition, think-tank institutions such as the Guangdong-Hong Kong-Macao Greater Bay Area Strategy Institute also provide decision-making support for regional innovation and development by conducting research on science and technology strategies and science and technology policies.

2.3. Industrial Layout and Regional Synergies

2.3.1. Characteristics of the Manufacturing Layout in the Nine Cities of the Pearl River Delta (PRD)

The manufacturing layout of the nine cities in the Pearl River Delta (PRD) is characterised by "one super city with multiple strengths and synergistic division of labour". Shenzhen, as the core city, is in a leading position in the country in terms of manufacturing scale and innovation capacity, with the output value of the on-board manufacturing industry reaching RMB 4.3 trillion in 2022, accounting for nearly 30 per cent of the weight of the Pearl River Delta. Shenzhen's electronics and information industry is particularly prominent, forming a complete industrial chain from R&D to manufacturing, with leading global technology enterprises such as Huawei and Tencent, which are at the forefront of communication equipment, computers, the Internet and other fields. Guangzhou, Foshan and Dongguan are as the second echelon, each with its own characteristics: Guangzhou has obvious advantages in automobile manufacturing and petrochemical industry, with large-scale automobile manufacturing enterprises such as Guangzhou Automobile Group, whose automobile output ranks top in the country; Foshan's household appliances and ceramics industry is renowned in the country, and household appliance enterprises such as Midea and Gree have a high reputation and market share in the global market; Dongguan is dominated by electronics, information and electrical machinery, with a complete electronic information industry chain formed. Dongguan, on the other hand, is dominated by electronic information and electrical machinery, and has formed a complete electronic information industry chain, and is an important production base for electronic products in the world. In addition, Huizhou, Zhongshan, Zhuhai, Jiangmen, Zhaoqing and other cities, though relatively small in scale, have also formed their own industrial advantages in specific areas. Huizhou's petrochemical industry and electronic information industry have strong competitiveness, with large petrochemical enterprises such as China Shipping Shell; Zhongshan's lighting industry occupies an important position in the country, forming a complete lighting industry chain; Zhuhai's biomedicine and aerospace industries are developing rapidly, attracting a number of well-known enterprises; Jiangmen's hardware products and food processing industries have a certain scale and influence; Zhaoqing is in the Zhuhai's

biomedical and aerospace industries are developing rapidly, attracting a number of well-known enterprises; Jiangmen's hardware products and food processing industries have a certain scale and influence; and Zhaoqing's new energy automobile and electronic information industries have shown good development potential. Overall, the manufacturing layout of the nine cities in the PRD has formed a pattern with Shenzhen as the core and other cities supporting it at various points, with strong synergy in the industrial division of labour among the cities, which has jointly promoted the high-quality development of the regional economy.

2.3.2. Mode of co-operation between Hong Kong and Macao and the Mainland manufacturing sector

The modes of co-operation between Hong Kong and Macao and the mainland manufacturing sector are varied and fruitful. As an international financial, trade and shipping centre, Hong Kong has a well-developed service industry, which has provided the mainland manufacturing industry with support in various aspects, including capital, technology and market channels. For example, Hong Kong's financial institutions have provided many financing services to mainland manufacturing enterprises, helping them to raise funds and make investments in the capital market and promoting the rapid development of the manufacturing industry. At the same time, Hong Kong's scientific research institutes and tertiary institutions also co-operate with mainland manufacturing enterprises in technology research and development and innovation, thereby upgrading the technological level of the manufacturing industry. In addition, organisations such as the Hong Kong Productivity Council have assisted mainland enterprises in upgrading and restructuring through the provision of services such as technology consultancy, management consultancy and automation upgrading. Macao, on the other hand, has relied on its tourism and leisure industries to co-operate with the mainland manufacturing industries in areas such as cultural creativity and tourism product development. For example, Macao's tourism industry has co-operated with mainland manufacturing enterprises in the development of tourism souvenirs and cultural and creative products, which has enriched the variety and cultural connotation of tourism products. In addition, Macao has also actively participated in the construction and management of industrial parks in the Mainland, introducing advanced management experience and technology to the Mainland, and promoting the upgrading and transformation of the Mainland's manufacturing industries. Overall, the mode of co-operation between the manufacturing industries of Hong Kong and Macao and the Mainland has been deepening, providing strong support for the synergistic development of the regional economy.

3. The Current Situation of The Development of The County Industry Chain in Guangdong Province

3.1. Overview of industrial development in Tai Po County

3.1.1. Introduction to major industries

(1) Ceramic Industry

The ceramic industry in Tai Po County has a long history and is one of its important pillar industries. Known as the "Hometown of Chinese Celadon Porcelain", Tai Po County has a history of more than 800 years of ceramic production. According to relevant data, the ceramic industry in Tai Po County is large in scale, with many ceramic production enterprises covering a complete industrial chain from raw material processing to finished product manufacturing. These enterprises not only have a deep accumulation in traditional ceramic production, but also continue to make progress in the application of modern production equipment and technology. The product range is rich, mainly including daily-use ceramics, architectural ceramics, sanitary ceramics, art ceramics and so on. Among them, daily-use ceramics are popular among domestic and foreign consumers for their exquisite craftsmanship and unique designs. Tai Po blue and white porcelain has become the leader in daily-use ceramics with its beautiful shape, crystal glaze and pure nature. Architectural ceramics and sanitary ceramics are widely used in the field of architectural decoration and home renovation, and the product range includes tiles and sanitary ware of various specifications. Art ceramics, on the other hand, has become a popular product in the high-end market for its unique artistic value and collection value. In terms of market distribution, the ceramic products of Tai Po County not only occupy a certain share in the domestic market, but also exported to Southeast Asia, Europe and the United States and other international markets, with high visibility and influence.

(2) Agricultural Product Processing Industry

The agricultural product processing industry in Tai Po County is dominated by honeydew and tea processing. For honeydew processing, Tai Po County has rich honeydew resources and is the largest red-fleshed honeydew planting base in the country. Processing enterprises mainly focus on the cleaning, grading, packaging and deep processing of honeydew. In recent years, as consumers' demand for healthy food increases, honeydew deep-processed products such as honeydew juice and honeydew preserved fruit have gradually become popular in the market. For example, through co-operation with universities, Guangdong Tongmei Food Co., Ltd. has developed more than 100 types of pomelos processing products, ranging from foodstuffs to daily necessities and cosmetics. In addition, pomelo peel is also widely used to make pomelo tea, pomelo wine and other products. These deep-processed products not only increase the added value of pomelo, but also increase the income of local farmers. In terms of tea processing, the tea processing industry in Tai Po County also has a certain scale, and the main processing products include green tea, black tea and oolong tea. Enterprises continue to improve the processing quality and added value of tea through the introduction of advanced processing technology and equipment. For example, modernised tea-making techniques are adopted to ensure the aroma and taste of tea to meet the needs of different consumers. In addition, Tai Po County is also actively exploring the development mode of combining the processing of agricultural products with cultural tourism, such as the development of rural tourism projects with the theme of honeydew, to further expand the development space of the agricultural products processing industry.

3.1.2. Industry chain structure and links

(1) Upstream raw material supply

In the industrial chain of Tai Po County, the upstream link mainly involves the supply of raw materials. For the ceramic industry, upstream enterprises are mainly responsible for providing basic raw materials such as clay and glaze. Tai Po County has abundant clay resources, providing a solid

foundation for the development of the ceramic industry. However, the mining and supply of raw materials also faces a few challenges, such as the sustainability of the resources, the cost of mining, and environmental requirements. With the increasing awareness of environmental protection and the strict implementation of relevant regulations, enterprises need to pay more attention to environmental protection and the rational use of resources in the mining process. In the agricultural processing industry, the upstream segment includes the cultivation and harvesting of honeydew and tea. Tai Po County is rich in agricultural resources and is the "Hometown of China's Honeydew", with its honeydew cultivation area and output ranking among the top in the country. in 2023, the area planted with honeydew in Tai Po County reached 173,400 acres, with an output of 175,900 tonnes. In addition, the tea planting area in Tai Po County is more than 100,000 mu, mainly planting oolong tea and other varieties. These rich agricultural resources provide sufficient raw materials for the processing industry. However, seasonal fluctuations and quality control of agricultural products are also issues of concern for the upstream segment.

(2) Midstream manufacturing

The midstream link is the core part of the industry chain in Tai Po County, mainly responsible for processing raw materials provided by the upstream into semi-finished or finished products. In the ceramics industry, midstream enterprises process raw materials such as clay into a variety of ceramic products through advanced production equipment and technology. These enterprises usually focus on technological innovation and optimisation of production processes to improve product quality and production efficiency. For example, ceramic enterprises in Tai Po County have continuously introduced modern production equipment and automation technology to improve the precision and stability of the production process. In addition, the enterprises also enhance the added value and market competitiveness of their products by developing new ceramic materials and improving production processes. In the agricultural products processing industry, the midstream segment includes the cleaning, grading, packaging and deep processing of honeydew and tea leaves. Enterprises continue to enhance the added value and market competitiveness of their products through the introduction of modern processing equipment and techniques.

(3) Sales and marketing of downstream products

The downstream link is mainly responsible for product sales and market expansion. The ceramic products of Tai Po County have a certain degree of popularity and influence in the domestic and international markets, and the enterprises actively expand their markets by participating in various exhibitions and establishing online and offline sales channels. For example, ceramic enterprises in Tai Po County often participate in ceramic expositions and trade fairs at home and abroad, such as the Guangzhou International Ceramic Industry Exhibition, Jingdezhen International Ceramic Expo, etc., to display their products and technologies, and communicate and cooperate with domestic and foreign buyers and customers. At the same time, the enterprise also actively expands online sales channels, using e-commerce platforms such as Alibaba, Jingdong, etc., to sell their products to all over the country and even overseas markets. In addition, enterprises also focus on brand building and innovation in marketing strategies to meet the needs of different consumers. In the agricultural products processing industry, downstream enterprises have promoted products such as honey pomelo and tea to a wider market through co-operation with supermarkets and e-commerce platforms.

3.2. Industrial Strengths and Weaknesses of Tai Po County

3.2.1. Resource endowment and industrial base advantages

Tai Po County has significant advantages in terms of resource endowment and industrial foundation. First, Tai Po County has rich natural resources, especially clay resources needed for ceramic industry, which provides a solid foundation for the development of ceramic industry. The clay resources in Tai Po County are not only rich in reserves, but also of excellent quality, with good plasticity and sintering properties, which are very suitable for making a variety of ceramic products. The abundance of these resources gives Tai Po County a natural cost advantage in the production of ceramics, enabling it to obtain high-quality raw materials at a lower cost, thereby increasing the market competitiveness of its products. In addition, Tai Po County's favourable geographical location at the junction of Guangdong, Fujian and Jiangxi provinces and its convenient traffic facilitate the transport of raw materials and the sale of products, further enhancing the development advantages of the ceramic industry. Secondly, Tai Po County is rich in agricultural resources, with a vast area planted with agricultural products such as honey pomelo and tea, providing ample raw materials for the agricultural products processing industry. Tai Po County is known as the "Hometown of China's Honeydew", and the planting area and output of honeydew rank among the top in the country. In 2023, the planting area of honeydew will reach 173,400 mu, and the output will be 175,900 tonnes. These high-quality honeydew resources provide a solid foundation for the development of the honeydew processing industry, and enterprises can take materials locally to produce a variety of honeydew deep-processed products, such as honeydew juice and honeydew preserved fruit. At the same time, the tea plantation area in Tai Po County is also more than 100,000 mu, mainly planting oolong tea and other varieties of tea with excellent quality and unique aroma and taste, providing abundant raw materials for the development of the tea processing industry.

3.2.2. Disadvantages such as small scale of industry and low level of technology

Although Tai Po County has advantages in terms of resource endowment and industrial foundation, the problems of its small industrial scale and low technological level are also more prominent. Firstly, the scale of industry in Tai Po County is relatively small, and most enterprises in the ceramic industry and the agricultural products processing industry are small and medium-sized enterprises, with an insignificant scale effect. For example, although the number of ceramic enterprises in Tai Po County is large, but most of the enterprises are small in scale, the lack of large-scale leading enterprises to drive, unable to form a strong industrial cluster effect. This leads to enterprises in the market competition is in an unfavourable position, difficult to compete with large enterprises, in obtaining orders, negotiating prices, brand promotion and other aspects of the lack of advantage. At the same time, the smaller scale also limits the financial strength and risk-resistant ability of enterprises, in the face of market fluctuations and operational difficulties, enterprises are prone to capital chain breakage, poor management and other

problems, affecting the stable development of the industry. Secondly, the level of technology is relatively low, especially the lack of technological innovation. Many enterprises still use traditional processes and technologies in the production process and lack the introduction and application of new technologies. For example, in the field of agricultural products processing, key enzyme preparations and ingredients rely on imports, and domestic independent R&D and production capacity is weak, resulting in higher production costs and lower added value of products. There are also shortcomings in the loss-reducing preservation technology and intelligent cold-chain logistics technology for fresh agricultural products, and agricultural products are prone to loss and quality deterioration during transport and storage, affecting the market competitiveness of products and consumer experience. In addition, although the rare earth mining and processing industry has a certain technical foundation, the environmental protection and efficiency of the smelting and separation process still needs to be improved. The traditional smelting and separation process has high energy consumption and heavy pollution, which is not in line with the requirements of modern environmental protection and sustainable development, and the production efficiency is low, which cannot meet the market demand for high-quality rare earth products. The lack of technological level limits the further development and competitiveness of the industry in Tai Po County. It is difficult for enterprises to achieve product upgrading and industrial upgrading through technological innovation, as well as attracting high-end talents and investment, which restricts the sustainable development and high-quality development of the industry.

4. Patterns of Integration and Development of Advanced Manufacturing Industries in Guangdong, Hong Kong and Macao Greater Bay Area with the Industrial Chain of Tai Po County

4.1. Industrial docking and synergistic development

4.1.1. Capitalising on the resource advantages of Tai Po County

Tai Po County has rich natural resources and a profound industrial base, which provides strong support for it to establish stable partnerships with manufacturing enterprises in the Guangdong, Hong Kong and Macao Greater Bay Area. Taking the ceramic industry as an example, Tai Po County is known as the "Hometown of Chinese Celadon Porcelain", and its high-quality clay resources provide raw material security for ceramic production. Through co-operation with advanced ceramic manufacturing enterprises in the Greater Bay Area, Tai Po County can not only provide a stable supply of raw materials for enterprises in the Greater Bay Area and reduce their production costs, but also leverage the strengths of enterprises in the Greater Bay Area in terms of technology research and development, product design, marketing, etc., to enhance the quality and productivity of their own ceramic products, thus realising mutual benefits and win-win situations. For example, enterprises in the Greater Bay Area can introduce advanced ceramic manufacturing technology and equipment into Tai Po County to help local enterprises improve their production processes, improve product quality and added value, and at the same time, can also better promote Tai Po County's high-quality ceramic products to domestic and international markets, expanding market share.

4.1.2. Promote the integration of Tai Po County industries into the industrial chain division of labour system of the Greater Bay Area

In order to promote the better integration of Tai Po County industries into the industrial chain division of labour system of the Guangdong-Hong Kong-Macao Greater Bay Area, it is necessary to start from several aspects. Firstly, Tai Po County should strengthen its industrial docking with enterprises in the Greater Bay Area and clarify its own positioning and development direction in the industrial chain. Based on its own resource endowment and industrial foundation, Tai Po County can select the industrial links that match the industrial chain of the Greater Bay Area for docking. For example, Tai Po County can rely on its ceramic industry foundation, actively participate in the division of labour in the ceramic industry chain of the Greater Bay Area, the development of ceramic raw material supply, ceramic product processing and other links, and the ceramic design, brand operation and other links in the Greater Bay Area to form a complementary. Through cooperation with enterprises in the Greater Bay Area, ceramic enterprises in Tai Po County can better integrate into the ceramic industry chain of the Greater Bay Area, obtain more orders and market opportunities, and at the same time can learn and learn from the advanced technology and management experience of enterprises in the Greater Bay Area to enhance their competitiveness and innovation ability. Secondly, Tai Po County should strengthen infrastructure construction, improve the level of transport, logistics and other supporting services, reduce the operating costs of enterprises and improve the competitiveness of the industry. For example, Tai Po County can increase its investment in transport infrastructure, improve the highway and railway networks in the region, enhance the efficiency of transport connections with the cities in the Greater Bay Area, and reduce the logistics costs of enterprises. At the same time, it can develop the modern logistics industry, build modern logistics parks and distribution centres, improve the efficiency and quality of logistics services, and provide fast and efficient logistics services for enterprises. In addition, Tai Po County can strengthen the cooperation between industry, academia and research with the Greater Bay Area, introduce and cultivate high-quality talents, and enhance the innovation ability and technology level of the industry. Through these measures, the industries in Tai Po County will be able to better integrate into the industrial chain division system of the Greater Bay Area, achieve synergistic development with the industries in the Greater Bay Area, and promote the overall enhancement of the regional economy.

4.2. Technological Innovation and Industrial Upgrading

4.2.1. Guide scientific research institutions in the Greater Bay Area to co-operate with enterprises in Tai Po County in technology R&D

The Greater Bay Area is home to many high-level research institutes and tertiary institutions, such as the Hong Kong University of Science and Technology and Sun Yat-sen University, which have strong R&D strengths and innovation capabilities in the fields of new materials, advanced manufacturing and electronic information. Through co-operation with these research institutes, enterprises in Tai Po

County can leverage external intellectual resources to carry out key technology R&D and innovation projects. For example, in the ceramic industry, enterprises in Tai Po County can co-operate with scientific research institutions in the Greater Bay Area to jointly research and develop new ceramic materials, environmentally friendly and energy-saving ceramic production processes, etc., to improve the technological content and added value of their products. Through the introduction of advanced ceramic material technology, such as nano-ceramics, composite ceramics, etc., the performance and quality of ceramic products can be upgraded to meet the market demand for high-end ceramic products. At the same time, the research and development of environmentally friendly and energy-saving production processes, such as low-temperature sintering technology, waste recycling technology, etc., can reduce energy consumption and pollution in the production process, to achieve green production, and improve the enterprise's ability to sustainable development. In addition, it can also establish technological innovation platforms and joint laboratories through industry-university-research co-operation, promote the transformation and application of scientific research results, and accelerate the technological upgrading and innovative development of industries in Tai Po County. For example, a technological innovation platform for the ceramic industry can be established to integrate the technological resources of scientific research institutes in the Greater Bay Area and enterprises in Tai Po County to carry out the research and development of common technologies in the ceramic industry and solve the technological bottlenecks of industrial development. At the same time, the establishment of joint laboratories to provide experimental sites and equipment support for enterprise technology research and development, and promote the rapid transformation and application of scientific research results. Through these co-operations, not only can improve the technological innovation ability of enterprises, but also strengthen the contact and communication between enterprises and scientific research institutions, to form a benign interactive mechanism of production, learning, research and use, and promote the innovative development and transformation and upgrading of industry in Tai Po County.

4.2.2. Supporting enterprises in Tai Po County to introduce advanced equipment and technology

The introduction of advanced equipment and technology is an important way to enhance the production and manufacturing level of enterprises in Tai Po County. The government can encourage enterprises in Tai Po County to introduce advanced production equipment and process technology at home and abroad by introducing relevant policies and providing financial support. For example, in the agricultural products processing industry, enterprises can introduce modern processing equipment, such as automated cleaning, grading and packaging equipment, to improve production efficiency and product quality. By introducing these advanced equipments, enterprises can achieve automation and standardisation of the production process, reduce manual operation, improve production efficiency and reduce production costs. At the same time, advanced processing equipment can improve the processing precision and consistency of products, ensure the stability and reliability of product quality, and meet consumer demand for high-quality agricultural products. In addition, the introduction of advanced preservation technology and cold chain logistics technology extends the shelf life of agricultural products, reduces the loss rate and enhances the market competitiveness of products. Preservation technologies such as vacuum packaging and gas-conditioned packaging can effectively inhibit the growth of microorganisms and enzyme activity, extend the shelf life of agricultural products, and maintain the colour, taste and nutrients of the products. Cold chain logistics technology such as refrigerated transport, frozen storage, etc., can ensure the low-temperature environment of agricultural products in the process of transport and storage, reduce the loss and quality degradation due to temperature changes, and improve the stability of market supply and competitiveness of products. In the ceramic industry, enterprises can introduce advanced kiln equipment and automated production lines to improve the firing quality and production efficiency of ceramic products, reduce production costs and enhance the market competitiveness of products. Through these measures, the manufacturing level of enterprises in Tai Po County will be significantly improved, laying a solid foundation for the sustainable development of the industry.

4.3. Infrastructure Development and Public Service Optimisation

4.3.1. Strengthening transport, logistics and other infrastructures

To achieve deep industrial integration with the Guangdong-Hong Kong-Macao Greater Bay Area, Tai Po County must strengthen its transport, logistics and other infrastructure development to reduce the operating costs of enterprises and improve industrial competitiveness. First, investment in transport infrastructure should be increased to improve the road and railway networks in the region and enhance the efficiency of transport connections with cities in the Greater Bay Area. For example, the construction and renovation of important transport arteries from Tai Po to Meizhou and from Tai Po to Chaozhou should be accelerated to shorten transport time and reduce logistics costs. Through measures such as improving the quality of roads, increasing the number of lanes and optimising traffic signals, we will increase the capacity of roads and the speed of vehicles, so as to reduce congestion and delays in the transport process. At the same time, we will strengthen the docking with the railway network of the Greater Bay Area and strive for the opening of more direct railway lines to the cities in the Greater Bay Area, so as to improve the convenience and economy of railway transport, provide more transport choices for enterprises and reduce transport costs. Secondly, we should develop the modern logistics industry and build modern logistics parks and distribution centres to improve the efficiency and quality of logistics services. For example, planning and building comprehensive logistics parks integrating warehousing, transport, distribution, information processing and other functions to provide one-stop logistics services for enterprises. Through the introduction of advanced logistics management technologies and equipment, such as automated three-dimensional warehouses, intelligent sorting systems and logistics information management systems, real-time collection, processing and sharing of logistics information will be achieved, to raise the level of automation and intelligence in logistics operations, reduce logistics costs and improve logistics efficiency. In addition, strengthening cooperation with logistics enterprises in the Greater Bay Area and establishing a regional logistics alliance to realise the

integration of logistics resources and complementary advantages, to further reduce the logistics costs of enterprises and enhance the competitiveness of industries in Tai Po County in the Greater Bay Area and even in the broader market. By strengthening transport, logistics and other infrastructure development, Tai Po County will provide enterprises with more convenient, efficient and low-cost logistics services, reduce their operating costs, improve the competitiveness and attractiveness of industries, and promote the rapid development of industries and the prosperity of the regional economy.

4.3.2. Upgrading financial services, human resources training and other public services

Financial services and talent training are key public services for promoting industrial development, and upgrading these two aspects is crucial to the transformation and upgrading of industries in Tai Po County. In terms of financial services, co-operation with financial institutions should be strengthened, financial products and services should be innovated, and diversified financing channels should be provided for enterprises in Tai Po County. For example, credit products suitable for small and medium-sized enterprises should be developed to lower the financing threshold and cost and meet the capital needs of enterprises at different stages. SMEs often face a shortage of funds during development. Through innovative credit products, such as credit loans and intellectual property pledge loans, they can better meet the financing needs of enterprises and support their expansion of reproduction and technological innovation. At the same time, venture capital and equity investment institutions are encouraged to enter Tai Po County to provide financial support for innovative enterprises and promote their technological innovation and industrial upgrading. Venture capital and equity investment institutions have rich capital and management experience, and can provide financial support and strategic guidance to help enterprises grow and develop rapidly. In terms of talent training, it should establish a perfect mechanism for talent training and introduction, strengthen cooperation with universities and vocational colleges, and carry out targeted talent training projects to enhance the skill level and comprehensive quality of the local labour force. For example, cooperation with colleges and universities to open professional courses in ceramic craftsmanship, agricultural product processing, etc., to cultivate professional and technical talents adapted to the needs of industrial development in Tai Po County. At the same time, vocational training will be strengthened, and various types of skills training and vocational qualification certification will be carried out to improve the employability and entrepreneurial ability of the labour force. In addition, formulate preferential policies to attract high-quality talents from the Greater Bay Area and neighbouring regions to work and start businesses in Tai Po County, to provide talent security for industrial development. For example, preferential policies such as housing subsidies, children's education and medical protection will be provided to attract high-calibre talents to work and start-up businesses in Tai Po County and solve the problem of talent shortage. By upgrading the level of public services such as financial services and talent training, we will create a favourable environment for the sustainable and healthy development of industries in Tai Po County, and promote the transformation, upgrading and high-quality development of industries.

5. Case Study on The Integrated Development of The Industry Chain in Tai Po County

5.1. Liangxinyuan Industry Co., Ltd: Ceramic Industry Transformation and Upgrading and Market Expansion

5.1.1. Technological innovation and equipment introduction

Ltd. is one of the representative enterprises of ceramic industry in Tai Po County, which has achieved remarkable results in industrial transformation and upgrading and market expansion in recent years. First, the company focuses on technological innovation, investing in the introduction of advanced production equipment and process technology to improve the quality and production efficiency of ceramic products. For example, the company has adopted automated production lines and precision moulding equipment to achieve standardised and large-scale production of ceramic products, reduce production costs and improve the stability of product quality. Through the introduction of advanced kiln equipment, the high temperature firing and rapid cooling of ceramic products have been realised, which improves the firing quality and reduces the defect rate of the products. At the same time, the company also focuses on research and development and innovation, and has set up a special R&D team to continuously develop new products and technologies to enhance the added value and competitiveness of products. For example, it has developed art ceramics with special glaze effect, adopting unique glaze formula and firing process, which makes the products have unique artistic style and aesthetics, and meets the demand of consumers for high-end ceramic products.

5.1.2. Market Expansion and Brand Building

In terms of market expansion, Liangxinyuan Industrial Co., Ltd. has taken positive measures. By participating in ceramic exhibitions at home and abroad, such as Guangzhou International Ceramic Industry Exhibition, Jingdezhen International Ceramic Expo, etc., the company displays its products and technology, and communicates and cooperates with domestic and foreign buyers and customers, expanding the company's market channels and customer resources. At the same time, the company has also established a combination of online and offline sales channels, the use of e-commerce platforms such as Alibaba, Jingdong, etc., the products are sold to all parts of the country and even overseas markets, increasing the market coverage and sales of products. In addition, the company also focuses on brand building, through advertising, brand promotion, participation in brand selection, etc., to continuously improve brand awareness and reputation, establish a good brand image, and win the trust and support of consumers. Through these efforts, Liangxinyuan Industrial Co., Ltd. has occupied a place in the fierce market competition, and become a model of transformation and upgrading of the ceramic industry and market expansion in Tai Po County, which provides useful reference and experience for the development of other enterprises.

5.2. Tai Po Industrial Transfer Park: Industry Transfer and Cluster Development

5.2.1. Park infrastructure development and supporting services

The Tai Po Industrial Transfer Park is one of the important carriers of industrial transfer in Guangdong Province, and has played an important role in promoting industrial transfer and agglomeration development in recent years. Relying on the resource advantages and industrial foundation of Tai Po County, the Park actively undertakes industrial transfer from the Pearl River Delta region and attracts many manufacturing enterprises to move in. First, the Park has provided transferring enterprises with good infrastructure and supporting services, such as standardised factory buildings, perfect water and electricity supply, and convenient traffic conditions, which have reduced their investment and operating costs and improved their productivity. For example, the park has constructed perfect municipal roads, water supply and drainage systems, lighting facilities, etc., providing enterprises with a good production and living environment. Secondly, the park focuses on the development of industrial agglomeration, by guiding the agglomeration of similar enterprises, forming an industrial cluster effect. For example, the park gathered a few ceramic production enterprises, these enterprises have formed a close cooperative relationship between the supply of raw materials, product processing, marketing and sales, and promote the sharing of resources and technology exchanges, enhance the competitiveness of the entire ceramic industry. In addition, the park also actively promotes the synergistic innovation and co-operative development between enterprises, through the establishment of industrial alliances and industry associations and other ways to strengthen the exchange of information and resource sharing between enterprises.

5.2.2. Industrial alliances and collaborative innovation

By establishing industrial alliances and collaborative innovation mechanisms, enterprises in the park have achieved resource sharing and technological cooperation and enhanced industrial competitiveness. For example, ceramic enterprises in the park jointly set up a ceramic industry alliance, through the alliance platform, enterprises can share raw material procurement, technology research and development, market sales and other information to reduce production costs and improve production efficiency. At the same time, the alliance also organises enterprises to carry out technological research and development and innovation activities, and work together to overcome technical problems, improve product quality and added value. In addition, the park also actively builds a public service platform to provide enterprises with technical research and development, personnel training, market development and other aspects of support and services. For example, the park has set up a science and technology service centre to provide technical R&D and innovation support for enterprises and help them enhance their technological innovation capability. At the same time, the park also pays attention to the introduction and cultivation of talents, through cooperation with universities and vocational colleges to carry out talent training programmes to provide enterprises with high-quality talent support. Through these measures, the Tai Po Industrial Transfer Park not only promotes the transformation and upgrading of industries in Tai Po County, but also makes positive contributions to the coordinated development of the regional economy.

6. Summary of Experiences and Patterns of Integrated Development Models

6.1. Adherence To a Problem- And Demand-Oriented Approach

6.1.1. In-depth research to find out the truth

In-depth field research in enterprises and industrial parks is a key way to understand the current situation of industrial development and find out the problems and needs. Through field research, first-hand information can be obtained, providing rich practical materials and realistic basis for research. For example, in the ceramic industry research in Tai Po County, through face-to-face exchanges with enterprise leaders, technicians, workers, etc., to understand the actual situation of enterprises in production, sales, technological innovation, etc., and to find out the problems and needs of enterprises in the industry chain docking, technological innovation, market expansion and other aspects. These findings provide an important reference basis for subsequent research and policy recommendations, making the research more targeted and practical.

6.1.2. Focused research on key issues

Conducting in-depth studies on key issues in industrial development is a necessary measure to promote industrial integration and development. For example, the ceramic industry in Tai Po County has the problem of poor upstream and downstream convergence in terms of industry chain docking, which affects the overall competitiveness of the industry. Through in-depth research, it was found that enterprises in the supply of raw materials, product design, market sales and other aspects of information asymmetry, poor cooperation and other problems. In response to these problems, suggestions such as strengthening industrial chain synergy, establishing an information sharing platform, and promoting inter-enterprise cooperation were put forward, providing concrete ideas and methods to solve the problem of imperfect industrial chain. In addition, for the problem of insufficient innovation capacity, through the study of scientific research resources and innovation platforms in the Greater Bay Area, it puts forward measures such as strengthening the cooperation between industry, academia and research, introducing advanced technology and equipment, and cultivating innovative talents, etc., which provides strong support for enhancing the innovation capacity of ceramic industry in Tai Po County.

6.2. Strengthening the Integration of Industry, Academia and Research

6.2.1. Bringing together multiple forces

Gathering the strengths of universities, research institutes and other parties to form interdisciplinary and inter-institutional research teams is the key to promoting industrial integration and development. By integrating the resources of all parties, a strong research synergy can be formed to provide all-round support for industrial development. For example, in the technological innovation of the ceramic industry in Tai Po County, the Guangdong Institute of Finance joined forces with a team of experts from Guangdong University of Technology, Southern Medical University and other institutions to form an interdisciplinary research team. These experts have rich theoretical knowledge and practical experience in the fields of material science, mechanical

engineering, design and art, which provide solid technical support for the technological innovation of ceramic industry. Through the co-operation with enterprises, the research team has carried out a few technological research and development projects, such as the research and development of new ceramic materials and the improvement of production processes, which have made significant contributions to the enhancement of the quality and market competitiveness of ceramic products.

6.2.2. Promoting the translation of results

Translating research results into practical industrial applications and development strategies is the core of promoting industrial integration and development. By carrying out technology R&D projects and writing policy recommendation reports, research results can be transformed into concrete industrial applications and policy support. For example, in the technological innovation of the ceramic industry in Tai Po County, the research team has applied the R&D results of new ceramic materials to actual production through cooperation with enterprises, improving the quality and production efficiency of ceramic products. At the same time, by writing a policy recommendation report, it provided a reference basis for the government to formulate policies to support the development of the ceramic industry. These policy recommendations include increasing financial support for the ceramic industry, establishing a technological innovation platform for the ceramic industry, and strengthening the training of ceramic industry talents, etc., which provide a strong policy guarantee for the development of the ceramic industry.

6.3. Focus on Regional Synergistic Development

6.3.1. Promoting regional cooperation

Promoting industrial co-operation between the Greater Bay Area of Guangdong, Hong Kong and Macao and Tai Po County to facilitate regional synergistic development is the key to achieving the integrated development of the industrial chain. Through the establishment of a coordinating mechanism for collaborative industrial development, coordination and cooperation between the Greater Bay Area and Tai Po County can be strengthened in terms of industrial planning, policy support and project cooperation. For example, the Greater Bay Area and Tai Po County can work together to formulate industrial development plans, clarify their respective development positioning and industrial division of labour, and form a pattern of complementary advantages and synergistic development. At the same time, through the establishment of an industrial co-operation project database, a few projects with potential for co-operation can be screened, and project tracking and services can be strengthened to promote the implementation of the projects on the ground. In addition, by organising enterprises to participate in industrial docking sessions, project fairs and other activities, we can also promote exchanges and cooperation between enterprises in the Greater Bay Area and Tai Po County, and promote synergistic development of industries.

6.3.2. Enabling resource sharing

Realising the sharing of resources between the Greater Bay Area and Tai Po County is the basis for promoting the integrated development of the industrial chain. By utilising the scientific research resources, market channels and other advantages of the Greater Bay Area, strong support can be provided for the industrial development of Tai Po County. For example, universities and research institutes in the Greater Bay Area can provide technology research and development, talent training and other services to enterprises in Tai Po County, to enhance their innovation capability and technology level. Meanwhile, the market channels and brand advantages of the Greater Bay Area can provide broader market space for Tai Po County products and enhance their market competitiveness. In addition, the capital, talents, technology and other resources of the Greater Bay Area can also provide support for the industrial development of Tai Po County through co-operative projects and investments. Through resource sharing, mutual benefits and win-win situation can be realised between the Greater Bay Area and Tai Po County, and synergistic development of the regional economy can be promoted.

7. Conclusions and Outlook

7.1. Conclusions of the Study

7.1.1. The significance of the deep integration of the industrial chain for regional economic development

The deep integration of the Guangdong-Hong Kong-Macao Greater Bay Area with the industrial chain of Tai Po County has far-reaching positive impacts on the high-quality development of the regional economy. Firstly, this integration promotes the optimal allocation of resources. The Greater Bay Area possesses rich research resources, advanced technologies and a broad market, while Tai Po County has rich natural resources and a special industrial base. Through the in-depth integration of the industrial chain, the two sides can share resources and complement each other's strengths, improve the efficiency of resource utilisation, reduce production costs and enhance the added value and competitiveness of products. For example, by cooperating with advanced manufacturing enterprises in the Greater Bay Area, the ceramic industry in Tai Po County will not only be able to obtain advanced technology and equipment support, but will also be able to leverage on the market channels of the Greater Bay Area to promote its products to a wider market, thus realising optimal allocation of resources and synergistic development of the industry.

Secondly, the deep integration of the industrial chain promotes industrial upgrading. Advanced manufacturing enterprises in the Greater Bay Area have significant advantages in technology research and development, product design, production management, etc. Through cooperation with enterprises in Tai Po County, they can drive technological innovation and product upgrading of industries in Tai Po County. For example, agricultural product processing enterprises in Tai Po County have improved the quality and added value of their products and promoted the upgrading of the agricultural product processing industry through the introduction of advanced processing technologies and equipment from the Greater Bay Area. Meanwhile, ceramic enterprises in Tai Po County have improved the quality and market competitiveness of their ceramic products and promoted the high-end development of the ceramic industry by cooperating with scientific research institutes in the Greater Bay Area to develop new ceramic materials and improve their production processes.

In addition, the deep integration of the industrial chain also promotes the coordinated development of the regional

economy. Through industrial co-operation and co-ordinated development, Tai Po County can better integrate into the economic system of the Guangdong-Hong Kong-Macao Greater Bay Area, expand its market space, and enhance the overall competitiveness and sustainable development of the regional economy. For example, through docking with the industries in the Greater Bay Area, the industries in Tai Po County are better able to meet the needs of the Greater Bay Area market, while also providing more market opportunities and development space for enterprises in Tai Po County, thus promoting the coordinated development of the regional economy.

7.1.2. Effectiveness of the integration development model

In the process of promoting the in-depth integration of the industrial chain between Guangdong, Hong Kong and Macao and Tai Po County, measures such as industrial docking, technological innovation and infrastructure development play an important role. Firstly, industrial docking is the foundation for achieving industrial chain integration. By clarifying the positioning and development direction of the industries of Tai Po County in the industrial chain of the Greater Bay Area, and promoting the docking and synergistic development of the industries of Tai Po County and the industries of the Greater Bay Area, the optimal allocation of resources and the complementary cooperation of industries can be achieved. For example, the ceramic industry in Tai Po County has not only enhanced the added value of its products, but also expanded its market space and realised synergistic development of the industry through cooperation with the home furnishing and decoration industries in the Greater Bay Area.

Secondly, technological innovation is the key driving force for promoting industrial chain integration. By guiding scientific research institutions in the Greater Bay Area to carry out technological research and development co-operation with enterprises in Tai Po County, and by upgrading the technological level and innovation capacity of enterprises in Tai Po County, we can promote technological upgrading and product innovation in the industry. For example, through cooperation with scientific research institutions in the Greater Bay Area, ceramic enterprises in Tai Po County have researched and developed new ceramic materials and improved production processes, which have improved the quality and market competitiveness of their products and promoted the high-end development of the ceramic industry.

Once again, infrastructure development is an important support for industrial chain integration. By strengthening transport, logistics and other infrastructure construction and upgrading the level of public services, it is possible to create favourable conditions for the in-depth integration of the industrial chain. For example, by improving the transport network, Tai Po County reduces the logistics costs of enterprises, improves the competitiveness of industries, and promotes the synergistic development of industries. At the same time, by upgrading the level of financial services, talent training and other public services, it solves the financing problems of enterprises and cultivates professionals, providing strong support for the deep integration of the industrial chain.

7.2. Future Prospects

7.2.1. Opportunities arising from the accelerated integration process in the Greater Bay Area

With the acceleration of the integration process of the Guangdong-Hong Kong-Macao Greater Bay Area, the industrial development of Tai Po County will usher in unprecedented opportunities. Firstly, the market integration of the Greater Bay Area will provide a broader market space for the products of Tai Po County. With the gradual elimination of trade barriers and market unification within the Greater Bay Area, Tai Po County's ceramics, agricultural products and other speciality products can enter the consumer market of the Greater Bay Area more conveniently. For example, ceramic products from Tai Po County can be supplied directly to architectural decoration companies and home renovation companies in the Greater Bay Area to meet their demand for high-quality ceramic products. Agricultural products such as honey pomelo and tea from Tai Po County can also be supplied through supermarkets, e-commerce platforms and other channels in the Greater Bay Area to quickly enter the tables of consumers in the Greater Bay Area to meet their demand for healthy and high-quality agricultural products. This will help increase the market share and brand influence of Tai Po County products and bring more orders and revenue to enterprises.

Secondly, the synergistic development of industries in the Greater Bay Area will promote in-depth cooperation between enterprises in Tai Po County and the Greater Bay Area. Through the docking and integration of industrial chains, enterprises in Tai Po County can establish closer cooperation with enterprises in advanced manufacturing and modern service industries in the Greater Bay Area. For example, ceramic enterprises in Tai Po County can co-operate with ceramic design companies and brand operation companies in the Greater Bay Area to jointly carry out design research and development and brand promotion of ceramic products, so as to enhance the added value and market competitiveness of their products; agricultural product processing enterprises in Tai Po County can co-operate with food processing enterprises and catering enterprises in the Greater Bay Area to jointly develop new agricultural product processing products and markets, and to expand the application areas of their products. Such in-depth co-operation will help enterprises in Tai Po County to obtain more resources and technical support, and enhance the overall competitiveness and innovation capacity of the industry.

In addition, the infrastructure connectivity in the Greater Bay Area will provide better conditions for industrial development in Tai Po County. With the continuous improvement of transport, logistics, information and other infrastructures, Tai Po County will be more closely connected to the Greater Bay Area. For example, with the construction and renovation of the main transport routes from Tai Po to Meizhou and from Tai Po to Chaozhou, the transport conditions in Tai Po County will be significantly improved, and the transport time for enterprises' products will be shortened and the logistics cost will be reduced, which will help to improve the market responsiveness and competitiveness of enterprises. At the same time, the improvement of information infrastructure will promote the rapid circulation and sharing of information, enterprises can more timely access to market information, technical information and policy information, etc., to provide strong support for enterprise decision-making and innovation.

7.2.2. Continuously deepening the direction of industry chain integration

In order to seize the opportunities brought about by the integration process of the Greater Bay Area, Tai Po County

needs to continue to deepen the integration of the industrial chain and promote the development of industries towards high-end, green and intelligent development. Firstly, high-end development is the key to enhancing industrial competitiveness. Tai Po County should strengthen technological innovation and product research and development, improve the technological content and add value of products, and advance to the high-end market. For example, in the ceramic industry, develop high-end ceramic products with independent intellectual property rights, such as the use of nanotechnology, biotechnology and other cutting-edge technologies, to develop ceramic products with special functions and artistic value, to meet consumer demand for high-quality, personalised products. At the same time, strengthen the brand building, enhance the brand awareness and reputation of the products, and enhance the market competitiveness and added value of the products. In addition, advanced technology and management experience can be introduced to promote the high-end development of the industry through co-operation with scientific research institutions and enterprises in the Greater Bay Area.

Secondly, greening development is an inevitable choice for achieving sustainable development. Tai Po County should strengthen environmental protection and resource conservation, promote green production technologies and techniques, and reduce pollution of the environment and waste of resources. For example, in the agricultural products processing industry, it adopts environmentally friendly processing equipment and processes, such as adopting energy-saving processing equipment and processes that reduce wastewater discharge, to improve the greening level of products. At the same time, the recycling of waste and the recycling of resources should be strengthened, for example, in the ceramic industry, the waste and wastewater generated in the production process should be recycled to reduce the waste of resources and environmental pollution. In addition, the development of green energy, green packaging, etc., can also be used to reduce the carbon emissions and environmental impact of the industry, to achieve the green development of the industry.

Finally, intelligent development is an important direction for industrial transformation and upgrading. Tai Po County should accelerate the in-depth integration of information technology and industry, and promote the intelligent transformation and upgrading of industry. For example, in the manufacturing industry, intelligent production equipment and management systems, such as industrial robots, automated production lines, intelligent manufacturing systems, etc., are introduced to improve the automation and intelligence level of production, reduce production costs, and improve production efficiency and product quality. At the same time, the application of information technology such as big data, artificial intelligence and the Internet of Things is strengthened to achieve intelligent management and optimisation of the production process, and to improve the production management level and market response speed of enterprises. In addition, intelligent management and optimisation of the supply chain can be achieved through the establishment of an intelligent supply chain management system to improve the efficiency and responsiveness of the supply chain. By continuing to deepen the integration of industrial chains and promoting the development of industries in the direction of high-end, green and intelligent, Tai Po County will be able to better integrate into the economic system of the Guangdong-Hong Kong-Macao Greater Bay Area, realise the sustainable and high-quality development of industries, and make greater contributions to the development of the regional economy.

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