

Countermeasures for Tobacco Industrial Cluster Development

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Abstract: Nowadays, the deepening globalization of the world economy promotes the economic development to present more and more obvious regionalization characteristics, and industrial clusters are increasingly becoming an important source for a country or region to achieve competitive advantages. China is the largest tobacco country in the world, and the tobacco industry is the largest source of tax revenue in China, which has made outstanding contributions to the national financial accumulation. After joining the World Trade Organization (WTO) and signing the Framework Convention on Tobacco Control (FCTC) of the World Health Organization (WHO), the competition in the domestic and foreign tobacco markets has become increasingly fierce, and more attention to health issues has put forward higher requirements for the development of China's tobacco industry. Therefore, the Chinese tobacco industry urgently needs to use industrial clusters to form economies of scale and enhance market competitiveness. Overall, the development level of China's tobacco industry is not high. Due to some existing problems that restrict the development of tobacco industry clusters, some measures must be taken to enhance the competitiveness of China's tobacco industry clusters in the world economy, such as strengthening overall coordination and planning guidance, guiding industries from agglomeration to cluster development, actively supporting related industries, and vigorously enhancing innovation ability. Therefore, it is necessary to find out the breakthrough point of the development of tobacco industry clusters, select the appropriate industrial clusters to focus on cultivating, strengthening the leading role, supplementing the chain and clustering, and guide and promote the healthy growth of tobacco industry clusters, so as to stimulate the growth of the national economy.

Key words: tobacco industry; clusters; economic development; countermeasures

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INTRODUCTION

Industrial cluster is an important economic phenomenon worldwide. Since the 18th century, many countries have seen a large number of enterprises gathering in a certain

space, which has affected the development of enterprises to some extent. The practice of economic development of major economies in the world shows that industries with competitive advantages are mostly concentrated in specific regions, for example,

the high-tech industries in the United States are concentrated in Silicon Valley, the financial industry in the United States is concentrated in Wall Street in New York, the software industry in India is concentrated in Bangalore, and the traditional industries in Italy are concentrated in the northeast. At present, in many countries and regions, enterprises are clustered in spatial geography as a way to improve industrial competitiveness.

Economic globalization has become inevitable. To adapt to the new pattern of economic globalization development, continuous mergers, acquisitions and reorganization, scale, clustering, and internationalization development have become the development direction for tobacco companies in the world today. Due to the huge economic benefits and special strategic significance of tobacco industry, countries all over the world place tobacco industry development in a prominent and hidden position, drive the national economy development with the tobacco industry development. At the same time, the major multinational tobacco companies have also adjusted their strategies successively by joining forces, and merging on a large scale to develop multinational tobacco groups with great anti-risk capabilities.

As the world's most populous country, China is also the world's largest producer and consumer of cigarettes. It produces and consumes about 1/3 of the world's cigarettes and has about 320 million smokers, accounting for 1/4 of the total number of smokers in the world, Cigarette consumption is about 30% of the world's total tobacco consumption. China's tobacco industry implements the national tobacco monopoly system of "unified leadership, vertical management, and monopoly". In the process of reform and opening up, it has made

outstanding contributions to the accumulation of national finances. However, in the increasingly severe situation of tobacco control, cigarette sales continued to decline. Therefore, the Chinese tobacco industry urgently needs to use industrial clusters to form economies of scale and enhance market competitiveness.

OVERVIEW OF INDUSTRIAL CLUSTERS

Definition of industrial cluster

Industrial cluster refers to a spatial industrial organization system in which a large number of closely related enterprises and related supporting institutions (enterprises that produce similar products or specific industries at the same production stage, or enterprises that are directly related to upstream and downstream industries, or other enterprises with closely related industries) gather flexibly in a specific geographical area, and form a flexible and specialized division of labor among enterprises in the region, form a close cooperation network, and take root in the local innovative social and cultural environment.¹

Characteristics of industrial clusters

Geographic concentration

The geographical concentration of enterprises is the basis for the production of agglomeration economy and the existence of cluster as a regional economic phenomenon. Most enterprises in each geographical area basically engage in product development, production and sales around unified industries, closely related industries or limited industries.

Cost advantage

Due to the close geographical location and concentrated enterprise layout, industrial clusters are conducive to the formation of a highly specialized and closely coordinated

division of labor and cooperation system, and realize the localization of procurement, thus forming the cost advantage of the whole cluster. In addition, different companies share resources such as public infrastructure, professional and technical labor, intermediate inputs, information and technology, which also greatly saves production costs.

Maximizing knowledge spillover effects

Within the industrial cluster, each enterprise is a link point of the same industry. Manufacturers, suppliers, important customers, supporting industries and related industry manufacturers in the same industry gather together, with front-to-back or horizontal industries. Contacts, frequent contacts and exchanges with each other promote the dissemination of knowledge such as process technology, supply and demand information, and business experience, which not only achieves large-scale production in the region, but also maximizes the effect of knowledge spillover.

Interactive development of industrial clusters and professional markets

Industrial clusters make full use of their own location, resources, material and technological basis, division of labor system, production and marketing network, etc. to gather together and develop in a rolling way. Some of them form a situation of interactive development between industrial clusters and regional professional markets during the development process. Cluster product sales have strong market penetration, especially in the period of rapid cluster growth. With the deepening of market development, some industrial clusters have developed into professional markets in their locations, gradually making the region the cluster center of a product. In turn, the formation of professional market will promote the development of the industry. The

professional market accompanying with industrial clusters plays a very important role in the development of industrial clusters.

ANALYSIS OF TOBACCO INDUSTRY CLUSTER

Overview of tobacco industry chain

From the perspective of supply, tobacco industry chain consists of tobacco planting, tobacco leaf processing, tobacco product production, and wholesale and retail trade, as shown in Fig.1. In terms of tobacco planting, the total global production area is about 3.2 million hectares, which can produce 5.8 million tons of green tobacco. Where, the top 40 producing countries in the world produce about 97% of the world's tobacco every year, and the Asian region produces 60% of the global tobacco. China is the world's top tobacco producer, producing 32% of global tobacco. In 2020, global tobacco planting made a total output value of about 18.3 billion US dollars, and the top ten countries and regions account for 82% of the total. Where, the top four countries in terms of output value include China (47%), Brazil (11%), the United States (8%) and India (6%). In tobacco processing link, China ranks the first with 65 processing factories, far exceeding the EU with 14 tobacco processing factories and 2,840 workers. In the production of tobacco products, there are 85,600 tobacco product factories in the world, of which 84,400 (98.60%) are located in Asia. In 2020, the world produces 5.6 trillion cigarettes, 40 billion cigars and cigarillos, of which, China's cigarette production accounts for 40% of the world, while the European Union, Russia and the United States together account for 22%. The total output value corresponding to the tobacco product production link reaches 265 billion US dollars. Classified by country and region, China with output value of 146 billion US

dollars (corresponding to a share of 55.09%) ranks as the top. In the tobacco wholesale sector, there are a total of 87,600 tobacco product wholesalers worldwide in 2020. Where, the EU, the United States and China have a total of 4,800 tobacco product wholesalers, with a total of 355,000 employees. In the tobacco retail sector, there

are 14 million cigarette sales outlets worldwide, with a total sales output value of up to 880 billion US dollars. Seen from the type of tobacco products, cigarettes account for 87% share, cigars account for about 3%, and the remaining 10% are for other tobacco products.²

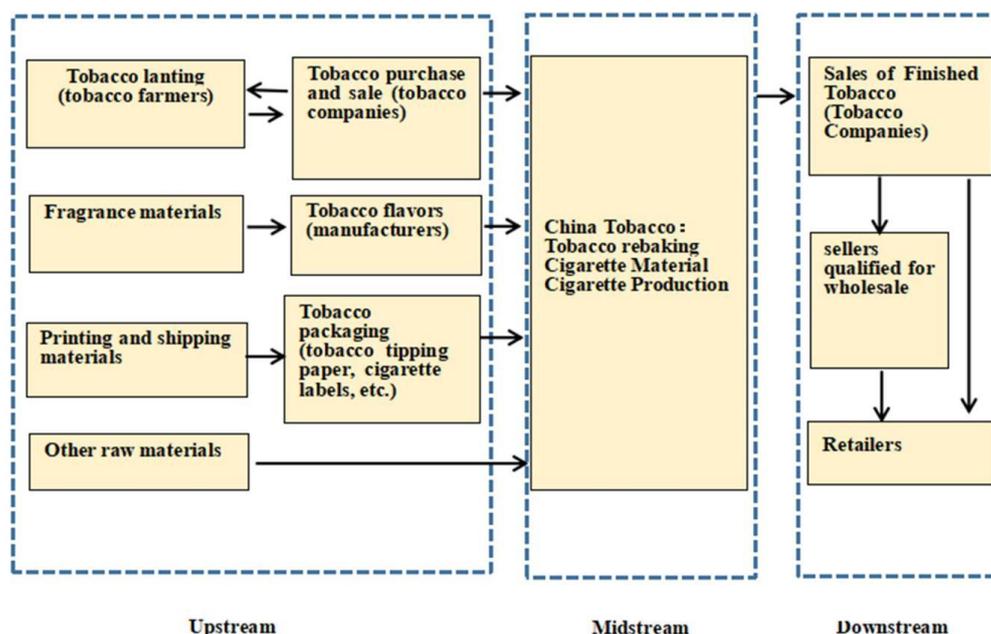


Fig. 1 Tobacco industry chain

Data Source: China Commercial Industry Research Institute

Status Quo of the Tobacco Industry Development

The massive tobacco industry has stable revenue scale with stable tax and profit contributions. Since the World Health Organization passed the "Framework Convention on Tobacco Control" in 2003, people are keen on healthy lifestyles and gradually lower demand for tobacco products.³ For example, the Population Assessment of Tobacco and Health (PATH) conducts nationally representative studies of tobacco use and its health effects in the US population.⁴ Kong Grace et al. in the United States proposed that tobacco prevention should target vulnerable youth.⁵ Harm-reduction tobacco, which focuses on

reducing harm and replacing tobacco, thus gradually came into being. Although countries have different levels of control and tax rates for tobacco products, the global tobacco industry is still expanding and gaining continued growth in benefits.⁶ For example, the tax rate per cigarette in Chile is as high as 89.1%. In 2020, consumption tax and value-added tax on tobacco products still bring total tax revenue of US\$401 billion to the global governments. The World Health Organization predicts that in the next decade the number of smokers will basically remain the same as the current estimated 1.1 billion people. It is expected that by 2024, the scale of the global tobacco (tobacco leaf) market may reach 9.1 million tons.

China with a vast territory has more than 3 million hectares suitable for tobacco planting.

Plus, its diverse terrain and climate favor the growth of various tobacco leaves. The output of flue-cured tobacco and cigarettes has close relation with China's abundant cheap labor, and sufficient human resources provide an advantage in output. In recent years, due to the national economic slowdown, the implementation of tobacco control measures and the increase in people's awareness of healthy living, tobacco demand keeps declining year by year. Fig. 2 shows China's tobacco output and growth rate in 2012-2019, and Fig. 3 shows the revenue growth rate of China's tobacco industry in 2014-2019.

Despite the decline in cigarette production and sales, due to the equal increase in tax and prices, the scale of profits and taxes in the tobacco industry is still on the rise. Statistics reveal that in 2020, China's tobacco industry achieves tax of interest totaling 1280.3 billion yuan, an increase of 6.2% year-on-year, and hands over fiscal revenue totaling 1203.7 billion yuan, an increase of 2.3%, creating new historical highs in tax of interest and handed-over fiscal revenue, thus making positive contributions to the increase of national and local fiscal revenues as well as economic development.

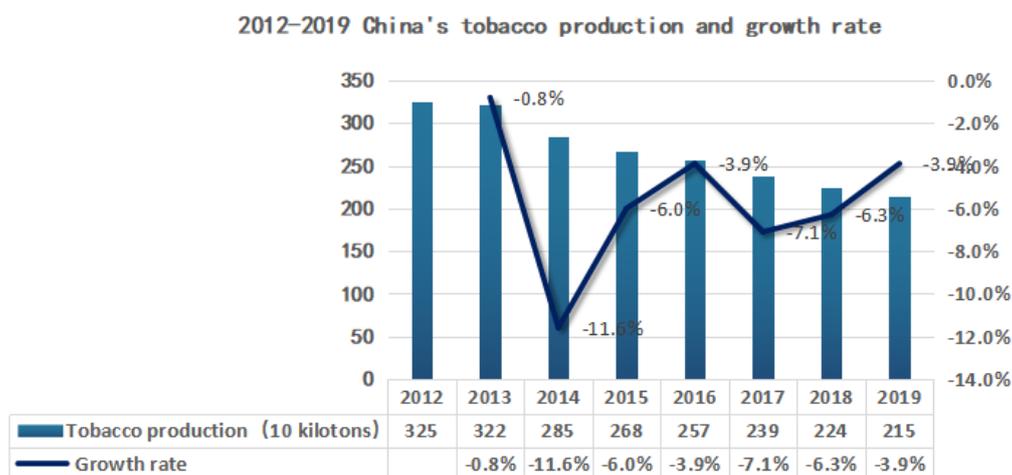


Fig. 2 2012-2019 China's tobacco production and growth rate
Data Source: National Bureau of Statistics of China



Fig. 3 2014-2019 China's tobacco industry revenue growth rate
Data Source: National Bureau of Statistics of China

The status quo of tobacco industry clusters

The world tobacco economy is developing by leaps and bounds. In developed countries in the world, due to long-term competition and continuous mergers and acquisitions of enterprises, the tobacco industry has formed an industry monopoly pattern. A few large tobacco groups monopolize most of the market share of the world tobacco industry, such as British American Tobacco Group, Philip Morris International, Imperial Tobacco Renault tobacco, Lexus tobacco group, etc.⁷ The concentration of the world tobacco industry will become higher and higher, and a few multinational companies will gradually form a monopoly on the world tobacco industry.

China State Tobacco Monopoly Administration formulated a strategic plan to move tobacco from north to south, thus gradually adjusting the tobacco leaf production layout. The superior status and good weather conditions in the south favor tobacco planting, so tobacco planting gradually shifts to the south. For example: Yunnan, Hunan, Sichuan, Guizhou, Fujian, etc., as areas quite suitable for tobacco planting, have gradually expanding tobacco planting scale in recent years. At the same time, cigarette production is more concentrated in the three provinces (cities) of Yunnan, Shanghai and Hunan. Regarding the current agglomeration of China's tobacco industry, there are mainly Yunnan clusters headed by Yunnan Hongta, Hongyun and Honghe, the Shanghai clusters gathering Beijing, Tianjin, and Shanghai cigarette companies, and the Hunan clusters represented by Changsha and Changde cigarette companies. Moreover, these three clusters have formed a strong radiation effect on the surrounding areas, so neighboring provinces are expected to gradually join

these three clusters, thereby enabling gradual formation of China's three major tobacco enterprise groups.⁸

Take Yunnan tobacco industry cluster as an example. For Yunnan, one of the three major tobacco production bases in China, concentration of its tobacco industry makes it the world's largest tobacco industry cluster. Yunnan Tobacco has formed an industrial cluster with an income of 400 billion yuan. With clusters formed in seven cities in the central and eastern parts of Yunnan (Kunming, Yuxi, Chuxiong, Zhaotong, Qujing, Honghe, and Dali), industrial gathering activities related to tobacco production reach about 180,000 square kilometers, accounting for 45.7% of the land area in Yunnan.⁹ Yunnan tobacco industry clusters are closely correlated with each other. In the industrial cluster, there are two leading industries with direct upstream and downstream industrial connections. One is formed by large cigarette industrial enterprises including Hongta and Hongyun Honghe; the other is formed by tobacco planting industry developed by growers. In addition to these two industries, there are also extensive complementary and service-oriented industrial enterprises centering on tobacco processing and tobacco planting in the industrial cluster, such as Yunnan Tobacco Machinery Co., Ltd., Yuxi Shuisong Paper Mill, Yuxi City Daying Street Aluminum Foil Paper Co., Ltd., etc. The tobacco industry cluster in Yunnan Province mainly takes industrial parks as a platform to play its gathering and leading role. Take Hongta District as an example. Hongta Tobacco (Group) Co., Ltd., the largest cigarette manufacturer in Asia, has spawned 28 supporting cigarette industrial enterprises. The division of labor among enterprises has been detailed to all links of auxiliary material production chain of

cigarettes. In Hongta Group's auxiliary material procurement, share of Hongta District flue-cured tobacco and cigarette supporting enterprises accounts for more than 70%. Except for nationally controlled tow unable to be produced in Hongta District, almost all of Hongta Group's auxiliary materials are locally produced. The aggregation of the tobacco industry in Yunnan has not only promoted the tobacco planting industry and cigarette industry, but also boosted the development of other related industries.¹⁰ In 2019, there were 608,000 tobacco farmers in 98 counties in Yunnan Province, achieving 25.1 billion yuan revenue from tobacco planting. Yunnan tobacco industrial and commercial enterprises achieved a total output value of 196.2 billion yuan, with 244.5 billion yuan revenue from flue-cured tobacco and cigarette sales.

PROBLEMS IN THE CONSTRUCTION OF TOBACCO INDUSTRY CLUSTERS

Lack of overall planning

At the present stage, the driving force of China's industrial agglomeration is still the regional geographical advantage, with obvious effect of market economy laws.¹¹ The country lacks overall planning for the tobacco industry, with homogeneous industries and similar projects, which has not yet led to an accurate match between industrial demand and space supply. The high taxation characteristics of the tobacco industry determine the strong support of local governments. Driven by benefits, it forms a situation of local division. The quality of raw materials and distance costs are not considered, which hinders the integration of resources, and it is difficult to achieve economies of scale and exert agglomeration effects.

Slow development and low level of industrial clusters

Industrial development generally undergoes three stages: concentration-agglomeration-cluster. Seem from the perspective of industrial structure, China's tobacco industry is "scattered". Compared with other manufacturing industries, China's tobacco companies are small in number, and some large and dominant companies are "weakening". Compared with the developed tobacco companies in the world, China's tobacco industry still lags behind. The loose enterprise system, weak business vitality and the low industrial concentration are uncondutive to large-scale specialized production. Projects, industries and strengths are scattered, and there is a lack of support from leading industries, resulting in low development level of the tobacco industry cluster and insufficient competitiveness.

Low industrial relevancy

Higher industrial relevance is a necessary condition for enterprises to coexist and form industrial clusters. Many tobacco industry clusters don't pay attention to the links between industries in industrial positioning, industrial layout and investment promotion. Even if the number of enterprises reaches a certain number, they can't form a complete supporting relationship between upstream and downstream of the industrial chain because of the small degree of correlation between enterprises, and the resources such as technology and information can't be shared, resulting in the phenomenon of gathering without clustering. In addition, the government's protection of local economy leads to weak industrial relevancy among tobacco industry clusters in different regions.

Weak technological innovation ability

As the original core force of the industrial structure, innovation can fundamentally increase the mutual conversion between

industries, thus promoting the optimization and upgrading of industrial structure and the formation of industrial clusters.¹² The "Framework Convention on Tobacco Control", the U.S. Food and Drug Administration (FDA), etc. have all emphasized the need to reduce nicotine content and decrease addictiveness of cigarettes. With the introduction of various tobacco control measures, international cigarettes have moved towards mixed, low-tar and light-flavor types. E-cigarettes have suddenly risen, but Chinese cigarettes are still dominated by high-tar and strong-flavor types. Most clusters are based on small and medium-sized enterprises, and innovation requires a lot of cost and carries great risks. Small and medium-sized enterprises in the cluster are reluctant about independent innovation in attempt to avoid risks. China has only developed new blended type cigarettes added with Chinese medicine or Chinese medicine extracts, while new tobacco products and e-cigarettes are emerging in endlessly worldwide. Some key technologies in China's tobacco industry still lack independent intellectual property rights. In particular, some key raw materials such as flavors and other raw and auxiliary materials still demand supply of international companies, so cigarette production is often restricted.¹³

CONCLUSIONS AND POLICY RECOMMENDATIONS

From a development perspective, higher concentration of the tobacco industry is more conducive to the optimization of resource allocation, so that product advantages are complementary, and economic efficiency is higher. At the same time, it also helps to give full play to the scale advantages of group operation in the tobacco industry, avoid the disadvantages of low resistance to risks

among scattered small tobacco companies with weak competitiveness. The concentration of China's tobacco industry is positively correlated with market performance. China's cigarette industry has obvious benefits of scale economies. Cigarette companies should be organized in the form of large groups and large enterprises, thus laying a solid foundation for China's tobacco industry clusters.

With the continuous enhancement of people's health awareness, the functional weakening role of cigarette as gift, the increase in tax and price rationalization, tobacco market meets gradually increasing restriction in development, and the tobacco industry is facing severe challenges. Nevertheless, the tobacco industry has always been an industry contributing a lot to China's taxation, and such status will remain unchanged for a long time to come. The core value of the tobacco industry is "national interest first, consumer interest first", the core element of which is to guarantee the growth of taxes and profits. It determines that we still need develop tobacco industry in the future. Therefore, it is necessary to put the vigorous development of tobacco companies in a strategic position and build the tobacco industry in a way conducive to human health and environmental development. Only by adhering to high-quality innovation-driven development, advancing supply-side structural reforms, stimulating the vitality of China's tobacco production and circulation, and developing industrial clusters to become bigger and stronger, can we form core competitiveness and effectively promote the sustainable development of China's economy. In this regard, the following suggestions are proposed:

Strengthening overall coordination and planning guidance

The agricultural sector should closely unite with the industrial sector, consider the planting of tobacco leaves and the layout of cigarette enterprises from a macro perspective, accelerate the construction of modern tobacco agriculture, improve the management of supporting tobacco field infrastructure, and guarantee the effective supply of high-quality raw materials while maintaining stability of the tobacco market. We should help tobacco factories to vigorously promote the industrialized production of tobacco leaves by combining enterprise with bases and combining companies with farmers, thereby increasing the local supply of raw materials. At the same time, agricultural departments and enterprises should strengthen technical guidance to tobacco farmers and reinforce supply of agricultural materials, actively explore farm-based business models in places where conditions permit, encourage and guide cooperative production between farmers based on common benefits, so that tobacco production is gradually intensive and the quality of tobacco leaves is higher. In the final analysis, competition in the cigarette market is competition in the high-end market, and also competition in brand value. According to the idea of developing a batch, producing a batch, and reserving a batch, we should further develop towards a higher end and occupy the high-end market to the maximum. At this stage, to make a big brand, some cigarette enterprises proceed with cooperative production in the Chinese tobacco industry. We can make innovation based on it and regard the present cross-provincial brand cooperative production of cigarette companies as the prototype of cross-provincial joint reorganization among enterprise. Oriented by brand, brand output

companies may inject capital into brand input companies to form a joint-stock system or a cooperative relationship based on assets. When time is ripe, we can promote cross-provincial joint reorganization,¹⁴ to form supporting industry bases and industrial clusters for high-quality tobacco development. For a long time, tobacco industry faces serious local protection. It is necessary to strengthen inter-provincial communication, exchange, and consultation as soon as possible, introduce relevant policies in accordance with the principles of free trade, sign trade agreements, regulate the order of the tobacco market, and break the barriers of local protection. Chinese tobacco companies should also learn from the advanced development experiences of tobacco companies in developed countries, take practical and feasible measures to create a relaxed development environment, so that companies will transform from extensive to intensive group production and operation, thus truly becoming the growth driver of the national economy.

Guiding the development of industry from agglomeration to cluster

It is necessary to follow the inherent laws of the formation, evolution and upgrading of industrial clusters to build industrial clusters and incubate industrial clusters. The leading industries are the "industries taking the lead" in industrial clusters, whose development can enhance the attraction of industrial clusters, derive or attract more related industries to gather and drive them to develop together, forming cluster effect, thus truly promoting tobacco industry transformation and upgrading. Therefore, the leading industries and leading enterprises with growth trend and driving effect should be selected according to the specific resource conditions of each region, the development law of industrial structure and the level of

production technology, the support and investment should be increased, the key cultivation should be carried out, and its radiation, driving and demonstration functions, as well as research and development, technology, supporting and other core capabilities should be brought into full play, so as to gradually derive or attract more relevant enterprises to gather, reduce costs through the gathering effect among enterprises, enhance competitive advantages, and lead the industry to develop from gathering to clustering, so as to become the "engine" and "locomotive" of cluster development. Taking advantage of clusters and forming large-scale regional tobacco groups can not only increase the degree of agglomeration, but also improve market performance.

Actively support related industries

By planning and designing the industrial chain, introducing industrial chain projects focusing on leading industries, key core technologies and supporting upstream and downstream products, and continuously participating in the high-end of the global industrial value chain, a new development pattern with the domestic big cycle as the main body and the domestic and international double cycles promoting each other will be formed with the continuous advancement of the short board of the industrial chain, so that the domestic market and the international market can be better connected. Enterprises in the tobacco industry should adopt more proactive and open mind, implement professional investment, business-based investment, industry investment, chain investment, etc., and boldly introduce supporting projects, collaborative projects, and chain projects in various supporting businesses to give birth to new industries, so that the cluster system is more complete and collaboration capabilities are stronger. It is

necessary to advance the transformation and upgrading of traditional products and cigarette product lines, target the high-end cigarette, first-class cigarette and second-class cigarette markets, increase the development and cultivation of new products, and increase the success rate of new product cultivation. Relying on the backbone enterprises to optimize the industrial layout and industrial system, and strengthening the industrial relevance and cooperation through the close organic agglomeration of related enterprises, can make the related industries become a powerful support for the cluster development, and gradually form a tobacco industry cluster with regional characteristics. It is necessary to actively support and develop backward linkage industries and forward linkage industries of tobacco industry clusters, especially pay attention to and focus on supporting industries that are both backward linkage and forward linkage to clusters, and cross-related industries among different clusters, thus forming a cluster development model of "government leading, famous enterprises leading and industrial chain supporting". We should encourage supporting enterprises in the tobacco industry to actively expand and extend business scope while satisfying local demand. Each enterprise in the cluster must firmly adhere to the concept of extraordinary development, break away from the shackles of the internal supply chain, strengthen the main business and expand the auxiliary business; focus on the local condition with international perspective; not only take a foothold in the original industry, but also develop other industries, expand business, extend the chain, thus earnestly growing bigger and stronger.

Vigorously improve innovation capabilities

For any enterprise in the world, technological innovation is the core to the technological progress of modern enterprises and the power source for the development of contemporary enterprises. As national demographic dividend decays and product costs increase, companies will be forced to strengthen innovation, update technologies and products, ultimately contributing to the development of national economy.¹⁵ According to the endogenous growth model of the two regions, foreign scholars found that industrial agglomeration can accelerate the speed of technology spillover, thus facilitating the common growth of the center and peripheral regions.¹⁶ With a view to strengthening national innovation capabilities, we should strengthen original innovation, integrated innovation, and re-innovation after introduction, digestion, absorption, thereby enhancing independent innovation capabilities of clusters. It is necessary to support technology grafting between enterprises and scientific research institutions, use "industry-university-research" activities as a platform to facilitate the alliance of enterprises and scientific research institutions, universities, expand the cooperation between the tobacco industry and social scientific research institutions, shorten the technology development and application cycle, form enterprise-centered technological innovation system, strengthen close ties in all links from raw materials, processes, sales to scientific research and development. We should direct enterprises to strengthen basic research and continuously update tobacco technology. There is need to do a good job in product design, transit from single technology development to integrated innovation in multiple links of raw material selection, formula design, process processing,

auxiliary material assembly, so that the optimization and superimposition effects of each single-item design are systematically integrated and maximally displayed in product design.¹⁷ We should carry out in-depth researches on tar reduction, formulas, smoking and health, and comprehensive tobacco utilization, and accelerate the implementation of major technological projects in the tobacco industry, such as cigarette harm reduction technologies, cigarette flavor enhancement and moisturizing, and Chinese cigarette processing production lines, thus developing a batch of high-tech achievements with independent intellectual property rights that play a key role in industry development and industrial upgrading. Competitiveness stems from the intensive interaction between complementary enterprises in the group, which not only increases the utilization efficiency of shared resources, but also stimulates innovative activities, facilitates the technical exchange and information dissemination among group members through frequent exchange of experience.¹⁸ The competition focus in the tobacco industry in the world today is science and technology, which is the basis for the development and expansion of the tobacco industry. Cluster enterprises promote the production transfer of new knowledge and new technology through cooperation, and maximize the positive externalities brought by innovation by establishing relevant cooperative relations, so that innovative enterprises can gain competitive advantages while enterprises in the cluster can also get the promotion of knowledge and technology.

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