Study on the Cultivation of Industrial Clusters in characteristic Towns in Western China-- using the cultivation of TCM industry cluster in Taicun town, Xianyang city, Shaanxi province as an example

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Abstract: Through studying the basic characteristics of the industrial development of small towns in western China, this paper analyses the following: the industrial selection characteristics of characteristic small towns in western China, the industrial cultivation process of characteristic small towns in western China, the subjective and objective conditions of industrial cluster composition, and the internal and external factors affecting the composition of industrial clusters. Using the cultivation of the Taicun town industrial cluster in Xianyang city, Shaanxi province, as an example, this paper discusses the methods and paths to promote the development of characteristic small towns through the selection and cultivation of characteristic industries.

1. Introduction
A characteristic small town is an important link between town and township and is the most dynamic “social cell” promoting urban and rural development.[1] The development of characteristic towns in developed areas in China provides a suitable model for county economic development and plays a positive role in promoting new-type urbanization.[2-4]

The economy of the western region is underdeveloped, and characteristic small (urban) towns are in the stage of cultivating industrial clusters and improving the level of urbanization. Learning from developed areas’ experience is important for developing characteristic small towns in western China.[5]

Throughout the development history of characteristic small towns in developed areas, all rely on industrial clusters to complete the development and construction.[6] The cultivation path of industrial clusters guides the rational development of industries and urban economic development and advances the urbanization process. The proposal of characteristic towns in Zhejiang province critically enlightens urban and rural development. In the western region, characteristics of the development of a small town (city), due to their special circumstances and limits (poor basic condition of the industrial cluster), little has been thoroughly learnt, most of the paper studied on the surface layer model phenomenon and there is an urgent need to study on, so the rational allocation of resources has not been achieved from the perspective of industrial innovation platform construction, industrial cluster composition and system formation.[4]
The western region is backward and poor; however, it is rich in local characteristic resources. With these favourable conditions, the region can develop characteristic industries and form industrial clusters. How does one select the industry type, and how does one cultivate the industry cluster? The following text discusses and studies the industry cultivation of characteristic small towns in western China from the following aspects.

2. Characteristics of industry cultivation in small towns in western China

2.1. Basic characteristics of industrial development of characteristic small towns in western China
In contrast to the industrial cultivation foundation of characteristic small towns (cities) in the developed areas in the central and eastern regions, the economy of the western region is relatively backward, mainly dominated by resource-intensive industries, with a low level of division of labour and low added value. These areas’ dependence on policies and external thrust is greater than market operation and spontaneous formation.[7-8] At the same time, the western region is rich in local characteristic resources, with space and advantages for development.[9]

The ecological fragility sensitivity is high, high-quality farmland is sparse, and the ecological environment limits development. The person-land relation contradiction is outstanding. Labour wages are low, the incomplete urbanized population is large, and there is a lack of innovative talent guidance. In western China, the employment mechanism is inflexible. Both the innovation mechanism and the talents are not sufficient.[10-11] The supporting facilities of cities and towns in western China, especially the roads, municipal facilities, public services and other facilities that play a supporting role in the industrial development of cities and towns, cannot match the formation of industrial clusters, which affects the interactive development of cities, towns and industrial clusters.[12] China's urban system structure is not perfect, and there is an insufficient number of small and medium-sized cities. The characteristic small towns and professional towns in the east and the middle of China have a positive impact on economic development. Compared with the eastern regions, these areas lack such influence, and urban development lacks sustainability.[2] The western region is at the agricultural basic economic development stage, which relies on resources and regional characteristics. The region is short of land resources, with large constraints on land indexes and land management. The agricultural industry is less driven by the secondary industry, and the development of the primary industry is less driven by regional economic development.[13-14]

There are many industrial parks in the western region; however, some are small in scale, with backward basic conditions and agricultural science and technology development, and fail to develop modern management, market operations and quality commodity chains. Secondly, industrial parks in different regions have similar industrial positioning and are innovatively weak. Most of these parks use low-end production methods with low level and poor production effects. The overall connection is weak; therefore, they cannot be integrated into clusters. Thirdly, the primary and secondary industries cannot develop well to drive linkages of the tertiary industry and become a large industry that drives regional economic development.[15]

2.2. Basic analysis of the cultivation of industrial clusters in characteristic towns in western China

2.2.1. Features of the development process of characteristic towns in western China
From the completion of the industry selection process, which is industry cultivation, industry cluster, industry and city integration, and regional development driven by industrial brand effect, the industry cultivation path should be developed. The following text uses the cultivation content of the industrial cluster stage as the main research content.[20]
Fig. 1 Schematic diagram of an industrial cluster formation process

The formation process of industrial clusters (Fig. 1) includes the following content. First, a full understanding of regional characteristics within the region, including historical environment, natural resources, subjective initiative of entrepreneurs (social network, lifestyle, living habits, and entrepreneurship), traffic conditions and other aspects. Second, utilize regional conditions to promote the cluster development of small and medium-sized enterprises, form mutual correlations in a certain geographical space, and promote enterprise cluster. Third, form production specialization enterprises and realize industrial agglomeration. Fourth, docking with the professional market and adjusting their own composition to further adapt to the market for change and upgrading will also improve the market size. Finally, industrial clusters should develop in tandem with rural industrialization and urbanization, and industrial parks with core productivity should be established to reduce resource redistribution and promote the urbanization process.

2.2.2. Analysis of the influence of industrial cluster cultivation in characteristic towns in western China

According to the analysis process for an industrial cluster, the western region in general is relatively lacking suitable infrastructure to support development compared with the eastern region, which is rich in natural resources but is unable to be well used due to a lack of professional technology and of entrepreneurs with innovative ideas; in addition, there is a lack of division of labour between the enterprise network, and the content of the private sector and scale obviously lag behind.[21] Characteristic town development in the western region is mutually influenced by industrial development, especially the industries that formed after clusters were created; this is one of the main factors that has important influence on the industrial cluster development.

Based on the analysis of the characteristics of industrial cultivation and the formation process and the influence of industrial clusters, the influencing factors of the industrial cluster stage of characteristic small towns in western China are as follows:

On the one hand, these factors are external, relevant influencing factors outside the industry. First, considering the impact of special regional characteristics and development history accumulation on industry cultivation in the western region, the adjustment of administrative power spatial pattern, regional market integration, regional cultural identity and integration, and regional shared resource allocation, as well as the change of various national systems, such as fiscal and taxation systems, population and land systems, will have an impact. A second factor is the study of the spatial scale of characteristic towns, considering the completion process of industrial cultivation in these. The change in resources, environment and ecological factors, the impact of the external environment, the sudden change in the innovative thinking environment, the change in external transportation and communication links, and the study of advanced production technology will all affect the industrial development, comprising the difference in the effect of resource allocation, system support and financing in characteristic towns.
On the other hand, there are internal factors, which are the influences of the existing or developing industry on industry cultivation when the characteristic town cultivates the industry. First, the industrial agglomeration effect of characteristic towns with the same characteristic advantageous industries and different industrial cluster levels has an impact on the industrial cultivation in the same regional urban system. The second internal factor is the communication degree among enterprises in industrial clusters: learning, communication, imitation, cooperation between enterprises, as well as game, conflict, and establishment of enterprise network system.[22-24]. The third is characteristic advantageous industry dynamic development analysis. According to the industrial life cycle, this factor encompasses whether the development situation of characteristic advantageous industries after time passes is consistent with the initial cultivation stage and whether they can continue to undertake the object of industrial cultivation of characteristic towns.

In sum, it is difficult for small towns in the western region to replicate the industrial cluster development model of developed regions. This development should be analysed from the perspective of deep resources, the environment and basic industrial conditions to drive the development of other towns on the premise of the development of core towns. There should be more focus on solving the problems concerning agriculture, rural areas and farmers. The space and social development of small towns supported by industrial clusters will not achieve the ideal state spontaneously. Only through effective public intervention, including perfect spatial planning mechanism, can the benign interactive development between industrial clusters of towns and small towns be realized.[25]

3. Study of the cultivation of industrial clusters in Taicun town, Xianyang city, Shaanxi province

3.1. Basic analysis of industrial cluster cultivation in Taicun town, Xianyang city, Shaanxi province

The development status of Taicun town is analysed in detail to meet the basic conditions of industrial cluster cultivation. Based on the basic situation of Taicun town and the basis of traditional Chinese medicine in Xianyang city, the characteristics of the cultivation and development process of industrial clusters are compared and analysed as follows.

3.1.1. objective condition analysis of industrial cluster composition

Historical environment. Qin District has had many famous doctors since ancient times. Xianyang traditional Chinese medicine has a profound history and culture. Xianyang city has Mr. Zhang Xuewen, the global TCM master, more than 50 provincial-famous TCM doctors and more than 190 municipal-famous TCM doctors. Locally, TCM is well-known all over the nation.

Natural resources. Northern Xianyang area is a loess plateau hilly-gully region; it has annual precipitation of 500-600 mm and annual average sunshine of 2017.2-2346.9 hours. The area has an annual average temperature of 9.0 to 13.2 °C, a frost-free period of 180 d, and a beautiful ecological environment. There are many different kinds of medicinal plants that are widely distributed, a total of 626 kinds of wild Chinese medicinal materials, and 230 commonly used kinds of herbs. Radix scutellariae, salvia miltiorrhiza and radix bupleuri are the natural ShiSheng District’s traditional Chinese medicines; thus, this area is the ideal planting area for Chinese herbal medicine development.

Location characteristics. Xianyang, adjacent to Xi’an, is located in the hinterland of Guanzhong plain and the core of the Guantian economic zone in Shaanxi province. Xianyang is the land and air transportation hub in the hinterland of mainland China. In addition to the increasing degree of assimilation of Xianyang and Xi’an city, Xianyang can make better use of the Xi’an national air traffic hub to develop the logistics industry. This area has a superior geographical position and convenient traffic conditions to support the development of Xianyang’s traditional Chinese medicine industry; raw materials procurement, production, sales and trade negotiation status have provided a strong foundation.

Traffic conditions. Shaanxi Traditional Chinese Medicine Health Industry Park is 7 kilometres away from Xunyi county, which is located at the intersection of 211 national road, 306 provincial road...
and Zheng-Xun highway; it can be closely connected with Xi’an and Xianyang city through Fuyin and Hebao expressway. Traffic conditions are very convenient.

Current situation of infrastructure and public service facilities. The area has a water supply plant (6,450 tons/day), and Taicun has a 110 kV substation and other infrastructure. The sewage treatment plant (8000 tons/day) is the main project of the enterprise incubation centre. The Taicun town agricultural and side-line products trading centre has been basically completed. Taicun town has a convenient service centre, and the Taicun village migrant workers resettlement community is under construction. Thus, this area is able to meet the requirement of basic construction condition requirements; however, it needs continual work and more time to develop. Public service facilities have not yet attained a suitable service level.

3.1.2. Analysis of subjective conditions of industrial clusters

Industrial development foundation. In Xunyi county, the Shaanxi Traditional Chinese Medicine Health Industry Park has problems with its development, such as a low industrial development level, insufficient development of the high-tech industry, and an incomplete integration of three industries. With help from the Zhejiang economic development model, the industrial development of characteristic small towns should be clustered, the traditional Chinese medicine industry level should be improved, and industrial upgrading should be completed to complete the process from small and medium-sized enterprises to industrial aggregation and then to industrial clusters. Xunyi county and Taicun town have a sufficient surplus labour force, which can meet the demand of traditional Chinese medicine enterprises.

Innovation mechanism. The integration of scientific research institutes of Xianyang traditional Chinese medicine colleges and universities with the traditional Chinese medicine industry has actually sustained the development of the Xianyang traditional Chinese medicine industry for a long time. At the same time, this development can conveniently take advantage of Xi'an's leading scientific and educational resources as well as its market and information advantages as an important national central city and improve its innovation ability and level through coordinated development with Xi’an. Moreover, the characteristic towns of traditional Chinese medicine are able to achieve mechanism integration through spatial integration, which lays a foundation for realizing cluster development.

Policies and institutions. As China's unique health resources, economic resources, scientific and technological resources, cultural resources and ecological resources, traditional Chinese medicine has always been highly valued by the country. The municipal party committee and government of Xianyang focus closely on TCM development and have issued several policy documents to guide and support TCM industry development. The opinions of Xianyang municipal people's government on supporting and promoting the development of traditional Chinese medicine proffered the goal of promoting the comprehensive development of traditional Chinese medicine in medical treatment, health care, scientific research, education, and industry and culture, realizing the goal of strengthening the city with traditional Chinese medicine.

In sum, Taicun town in Xianyang city, Shaanxi province, is located in the western developing regions [27] and has a better foundation. Taicun town has basic conditions for the cultivation of a traditional Chinese medicine industry cluster; therefore, it can be used to implement industrial cultivation and develop characteristic towns under industrial cluster guidance.

3.2. Influence analysis of industrial cluster cultivation in Taicun town, Xianyang city, Shaanxi province

3.2.1. Analysis on the external influence of industrial cluster cultivation in Taicun town

Taicun town traditional Chinese medicine industry cluster has the basic conditions. Through in-depth investigation and study of the weak links, this area continues to need to attach great importance to strengthening its industries and seriously consider the important conditions to complete the industrial cluster, such as a professional market and an industrial park, which are important components to
complete the industrial cluster. Thus, there should be more focus on cultivating the implementation. In addition, with an in-depth understanding that considers whether the initial selection conditions can actually meet the needs of selective cultivation over time, specific problems that exist in TCM industry development can be solved accordingly.

Firstly, the issue is related to the regional characteristics and industrial development background of western China. Among the industries selected for development in the western region, the traditional Chinese medicine industry is a combination of the agricultural planting industry and the medical processing industry, which is beneficial to the actual development situation in this region.

Secondly, the CEEUSRO connection with Xianyang city is not close. In Xianyang, the Chinese medicine industry development-related research institutes, personnel and resources have obvious advantages; however, there is insufficient integration, scattered resources, and poor medicine combination and a distant CEEUSRO combination. Furthermore, the platform between enterprises, schools, research institutes and hospitals, equipment sharing, joint research, medicine, study and research in a collaborative innovation organization system and the system mechanisms have not yet formed. Thus, science and education resources and innovation mechanisms cannot be converted into industry development advantages.

The public service facilities in Taicun town are relatively complete; however, the general level is low, and it is difficult to provide public services for Taicun town’s traditional Chinese medicine industrial area. The traditional Chinese medicine industrial zone in Taicun town is also backward in supporting public service facilities and lacks overall service facilities.

3.2.2. Analysis on the internal influence of industrial cluster cultivation in Taicun town
First, we will address the professional market. The traditional Chinese medicine industry in China has formed a professional market, and the performance of the professional market has obvious mutual promotion and a positive effect on the industrial cluster. The traditional Chinese medicine industry in Taicun town learns from the massive economic development in Zhejiang province and considers that a weak professional market construction has an important impact on the sales of traditional Chinese medicine products and the overall development of the whole industry.

Second, the construction of a TCM industrial park is in its initial stage. Although some enterprises have entered the industrial park, most remain in the construction stage and do not yet operate. The planned area of the park is 8 square kilometres, and the factory area is only 0.78 square kilometres. The existing industry types are mainly pharmaceutical manufacturing and food processing, with Chinese medicinal materials and food processing as the primary processing sub-industries; thus, this shows low-end characteristics and weak competitiveness.

3.3. Research on the cultivation path of the TCM industry cluster in Taicun town, Xianyang city, Shaanxi province
3.3.1. Mass development of TCM enterprises
Traditional Chinese medicine (TCM) in Taicun town of Xianyang city, Shaanxi province will feature TCM industries such as the decoction of TCM slices and TCM health care products processing. The main products include TCM pieces, health products, health food and daily chemical products.

According to the current traditional Chinese medicine product situation in Xianyang city and according to the local characteristics of different regions, it is necessary to constantly take appropriate measures to reduce tax standards, strengthen land supply, appropriately reduce the threshold for enterprises to enter, and generate a bonus reward system. At the same time, it is necessary to strengthen the overall planning and coordination of policies to promote the introduction and implementation of relevant policies as soon as possible. A favourable policy environment encourages local pharmaceutical farmers to plant, attracts traditional Chinese medicine enterprises and related enterprises to settle in Xianyang, and forms the basis of industrial cluster development.
3.3.2. TCM processing and planting industry technology

We will encourage key enterprises such as Haitian pharmaceuticals to innovate the mode and technology of the TCM processing industry, build an R&D platform for TCM derivatives, and actively develop new TCM health products, functional foods and other products. The innovation mechanism of TCM industrial cluster development is studied using the integration mechanism of "CEEURSO", "industry-city integration", "combination of culture and tourism" and other aspects. This endeavour mainly depends on a number of pharmaceutical companies such as Buchang pharmaceutical, Haitian bisazza pharmaceutical, and Junbisha pharmaceutical as well as the cooperation with colleges or institutes, represented by Shaanxi university of traditional Chinese medicine and Shaanxi institute of traditional Chinese medicine colleges. Topic research must then be conducted on key technology such as Chinese herbal medicine planting and processing. Research and development, new technology promotion, and achievement transformation are also important; finally, these will lead to the market.

3.3.3. The professional market of TCM industry shall be built step by step

Establish an interactive mechanism between industry and the professional market. On the one hand, hastening the compilation of Chinese traditional medicine enterprises aids in forming an industry; on the other hand, this should also vigorously construct Xianyang and the surrounding Chinese herbal medicine market. A professional market for Chinese traditional medicine enterprises provides a convenient and available shared sales network, among other provisions, to obtain marketing information and reduce the trading risk uncertainty, which drives the development of the Xianyang industry characteristic of traditional Chinese medicine. Gradually, this process can form market competition and a feedback mechanism.

3.3.4. The improvement of supporting facilities of TCM featured towns

The improvement of supporting facilities to complete the scene.

Construction of towns and industrial parks. (Fig. 2) According to the development orientation of traditional Chinese medicine characteristic towns, these towns are divided into residential groups, comprehensive service groups and industrial groups. Comprehensive construction of roads, municipal pipe networks and public service facilities has been performed to meet industrial development needs. Developing Taicun town promotes industrial clusters.[28-29]12

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1 with the successive promulgation of the action plan for the prevention and control of water pollution (2015) and the plan for the prevention and control of air pollution (2015), the intensity of pollution prevention and control is gradually strengthened. Xianyang in 2016, issued the xianyang water pollution prevention plan (2016), puts forward the city will intensify prevention and control of atmospheric pollution, but also control industrial emissions as a key of the prevention and control of atmospheric pollution, offered to dramatically reduce SO2 emissions, such as with the improvement of environmental quality standard, enterprise rising into the threshold of urban environment.

2 environmental air quality in county towns of shaanxi province (2017)
4. Conclusion

(1) Given the development basis of the western region characteristic town industry, industry selection characteristics, industrial cluster composition analysis, and analysis of influential factors of the industrial cluster, as well as the cultivation mode and the path of industrial cluster studies, research in the future will continue to disperse to industry to cultivate and support industry growth to the mature stage of cultivation.

(2) In this study, the cultivation of a traditional Chinese medicine industry cluster in Taicun town, Xianyang city, Shaanxi province, was used as an example. Relying on natural resources and basic industrial conditions, the cultivation of characteristic towns in western China was completed using path guidance in the construction of characteristic towns, industrial clusters and industrial parks.

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