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Study on the Coordinated Development of New Urbanization and Industrial Structure in Weinan City

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Abstract: The development and quality of new urbanization cannot be achieved without the support of various subsystems within the city, and the industrial structure, that is, is an important force to promote the development of new urbanization, and the interaction relationship between the two is an important issue in realistic development. By constructing the quality evaluation system of new urbanization and industrial structure evaluation system of Weinan City, the quality of urbanization and industrial structure of Weinan City from 2012 to 2021 are measured and evaluated objectively. The data show that the quality of new urbanization and industrial structure of Weinan City from 2012 to 2021 have been well developed, and the coupled coordination relationship between them is high-quality coordination but there is a decreasing trend.

Keywords: New Urbanization; Industrial Structure; Evaluation; Coupling; Semi-urbanization.

1. Research Background

1.1. Background of the study

Urbanization is a necessary path for China's socio-economic development and social stability [1], and its impact on urban development is reflected in many aspects such as economy, urban-rural coordination, and population structure [2], and China has experienced the world's largest urbanization, involving the largest number of people and also the fastest process. As the urbanization process accelerates, the dynamic mechanism is transformed [3], and the traditional urbanization cannot adapt to the new reality trend [4], which affects the economic development more. The Key Tasks of New Urbanization and Urban-Rural Integration Development in 2021 mentions that based on the new development stage, implementing the new development concept, building a new development pattern, coordinating development and security, and deeply implementing the new urbanization strategy with people as the core. The new urbanization has played a driving role in China's urbanization process [5], and at the same time, the economic structure has been transformed, with the share of agriculture decreasing year by year, the industrial development mode transforming from mainly labor-intensive and resource-intensive to science and technology innovative, and the contribution of the tertiary industry to the gross product increasing [6], but at the same time, some problems in the economic structure have been exposed [7].

A summary of existing studies reveals that research results focus on different aspects due to the differences in urbanization process and industrial structure in each region. The research trend changes from theory to practice, and the research scale becomes more specific, narrowing from national macroscopic scale to regional perimeter scale. In the study of the interaction between new urbanization and industrial structure, scholars generally agree that the two are mutually beneficial [8]. Shen Zhengping found that the adjustment and optimization and upgrading of industrial structure have significantly improved the quality of regional urbanization development [9]; Liao Xiaomei found that there is an obvious connection between new urbanization and industrial structure, and the two promote each other [10]; new urbanization has laid a good support for the optimization and upgrading of industrial structure, and accelerated the expansion of industrial development space as well as synergistic agglomeration. In terms of the coordinated development of both, scholars have measured the coordinated development between new urbanization and industrial structure in different regions through examples [11] [12], and Yang Wenju used Johansen co-integration test and other methods to empirically analyze the relationship [13]; Pan Xingchen focused on the dynamic changes of the coordination degree of urbanization and industrial structure in the middle reaches of Yangtze River urban agglomeration [14].

1.2. Significance of the study

New urbanization is an important research object and research hotspot in geography [15]. New urbanization differs from urbanization in the traditional sense in both concept and connotation. For the characteristics of urbanization at the present stage and future trends, the study analyzes and evaluates the development quality of new urbanization in Weinan City, and through quantitative analysis of the data, the obstacles and favorable conditions for the development of new urbanization in Weinan City, and the weight of each factor the study analyzes and evaluates the quality of new urbanization development in Weinan City. On the basis of the evaluation of the quality of its new urbanization development, the coordination between new urbanization and industrial structure is evaluated, and the development path is constructed based on the Weinan City locality.

2. Data sources and research methods

2.1. Study area

The study takes the Weinan city area as an example. Geographically, Weinan has a total area of 13,000 square kilometers and is located in the northwest region, in the southeast of the Loess Plateau; in terms of location conditions, Weinan is located at the intersection of three provinces, namely Shaanxi, Shanxi and Henan, and has a superior

geographical location. With a total population of 5.56 million, Weinan is the second most populous city in Shaanxi Province. Its main urban area is located in the southwestern part of the city, in the core circle of the Xi'an metropolitan area.

2.2. Data sources

The data used for the study were mainly obtained from the Shaanxi Provincial Statistical Yearbook 2013-2022 and the Weinan City Statistical Bulletin 2013-2022.

2.3. Research Methodology

2.3.1. Entropy power method

Entropy weighting method is a team member is a method of objective weighting through weighting analysis after the data has been dimensionless and standardized. Firstly, the data should be standardized; then the standardized data should be assigned: (1) calculate the proportion of each index; (2) calculate the entropy value of each index; (3) calculate the difference coefficient of each index; (4) normalize the data and calculate the comprehensive evaluation value.

2.3.2. Coupled coordination model

Table 1. Indicator building

Target layer	Indicator layer
New Urbanization (S1)	1.Urbanization rate of urban population 2.Gas penetration rate 3.Urban road area per capita 4.Green space per capita Number of beds in health institutions 5.Gross regional product per capita 6.Disposable income of urban residents
Industrial Structure (S2)	1.GDP share of primary sector GDP 2.GDP share of secondary sector GDP 3.Tertiary sector GDP as a percentage of GDP

Coupling is a physical concept that denotes the process by which two and more systems interact with each other while the avenue is coordinated [16], and the adopted measure is formulated as follows:

$$C = \frac{\sqrt{X1 + X2}}{(X1 + X2)}$$

efference of relevant planning and related research such as "New Urbanization and Urban-Rural Integration Development Key Tasks in 2022", the indicators are selected from the principles of objectivity and so on.

3. Evaluation of the Quality of New Urbanization Development in Weinan City

3.1. Evaluation of the Quality of New Urbanization Development in Weinan City

According to the entropy value method, the weight of urbanization rate of permanent population in Weinan City is 0.1055, the weight of gas penetration rate is 0.1352, the weight of per capita road area is 0.1537, the weight of per capita green area is 0.2305, the number of beds in health institutions is 0.1234, the per capita GDP is 0.1233, and the disposable income of urban residents is 0.1284.From 2012 to 2021, the quality score of new urbanization increased from 0.0562 to 0.1975.It can be seen that the overall score of new urbanization in Weinan City is on a rising trend year by year, with a stagnation in development during 2018-2019, and the green area per capita and urban road area per capita have a greater impact on the quality level of new urbanization in Weinan City. The per capita GDP score of Weinan City increased from 0.00002 in 2012 to 0.22166 in 2021, which is an important contribution to the development of new urbanization in Weinan City, while the per capita urban road area score shows a decreasing trend, which laterally reflects the current problem of the conflict between people and land.

3.2. Evaluation of the industrial structure of Weinan City

Table 2. Industrial structure evaluation

(Weighting)	**0.2416**	**0.4566**	**0.3018**	
	Gross Domestic Product of Primary Industry Share of GDP	Gross Domestic Product of Secondary Industry Share of GDP	Gross Domestic Product of Tertiary Sector Share of GDP	Overall Score
2012	0.07836	0.00617	0.00002	0.0218
2013	0.17600	0.00002	0.04292	0.0555
2014	0.11633	0.02567	0.02190	0.0464
2015	0.07716	0.09962	0.08853	0.0908
2016	0.04823	0.14508	0.12477	0.1155
2017	0.12537	0.14088	0.13883	0.1365
2018	0.17479	0.13623	0.14650	0.1486
2019	0.14586	0.15003	0.15233	0.1497
2020	0.00002	0.14778	0.15403	0.1140
2021	0.05787	0.14853	0.13016	0.1211

According to the data analysis, the industrial structure of Weinan City shows a fluctuating upward trend from 2012 to 2021. The share of primary industry in the overall industrial structure of Weinan City fluctuates and decreases, the share of secondary industry in the industrial structure of Weinan City increases, and the share of tertiary industry in the industrial structure of Weinan City increases significantly, which has an important impact on economic development. The data during the study period show that the industrial structure of Weinan City is gradually changing to favor the tertiary industry, but the secondary industry still holds a large share.

4. Analysis of the Coordinated Development of New Urbanization and Industry in Weinan City

According to the grading of coupling coordination, there is

a high-quality coordination relationship between the quality of urbanization and new urbanization in Weinan except for 2012, but from 2013 to 2021 shows a fluctuating downward trend, which indicates that the coordination between the industrial structure of Weinan and the development of new urbanization before decreases, and the optimization and upgrading of the industrial structure should be paid attention to while promoting the development of new urbanization.

Table 3. Coupling degree

	Quality of new urbaniza tion (u)	Industrial Structure(v)	Coupling degree	Coupling coordination
2012	0.0562	0.0218	0.8970	0.1786
2013	0.0722	0.0555	0.9914	0.2483
2014	0.0558	0.0464	0.9958	0.2235
2015	0.0806	0.0908	0.9982	0.2943
2016	0.0922	0.1155	0.9937	0.3249
2017	0.1320	0.1365	0.9999	0.3670
2018	0.1575	0.1486	0.9996	0.3901
2019	0.1794	0.1497	0.9959	0.4012
2020	0.1977	0.1140	0.9632	0.3769
2021	0.1975	0.1211	0.9708	0.3837

5. Conclusion and Discussion

5.1. Problems

5.1.1. Semi-urbanization phenomenon

Unlike urbanization in the traditional sense, new urbanization emphasizes "people-oriented" [17], humanism discusses people's problems and focuses on people's orientation, and urbanization of people and social services are important issues in the development of new urbanization [18], striving to realize urbanization in social, economic and ecological aspects [19]. However, in the real development, many problems have emerged in the promotion of new urbanization [20]. Population urbanization is the core issue of new urbanization, and the restrictions of policies and resources have made it difficult for some residents to enjoy the dividends of new urbanization because they have been on the margins of society for a long time, and the phenomenon of semi-urbanization has emerged, such as the problem of settlement in cities and the lack of social security in the workplace for the mobile population. Weinan City has a low level of development in public facilities and health, making it difficult to build a better living environment.

5.1.2. The problem of disconnected industrial structure upgrading

The development of new urbanization requires the promotion of several elements, each of which presents different characteristics at different stages [21]. In the context of economic transformation, the development of new urbanization and industrial structure upgrading are mutually reinforcing effects, and the imbalance in the relationship between the two will lead to the unbalanced development of Weinan City, so attention should be paid to the development of industry-city integration. Weinan is located at the core of the Xi'an metropolitan area, which is very convenient for undertaking the industrial transfer of Xi'an, and this is one of the advantages of industrial development in Weinan. Before optimizing and upgrading the industrial structure, it is necessary to fully evaluate the existing industrial base conditions in Weinan City, combine the local resource conditions, scientifically lay out, strengthen the construction of special industrial parks, and vigorously develop advantageous industries. The construction of industrial clusters not only plays a good agglomeration effect and accelerates the development of the economy, but also promotes the development of infrastructure and public services. In turn, the development of new urbanization can provide a good social foundation and a perfect service system for the optimization and upgrading of industrial structure in Weinan City.

5.2. Optimization measureso

5.2.1. Top-level system

The development of new urbanization and the optimization and upgrading of industrial structure are inseparable from the government's macro-control, which is needed in terms of top-level design in terms of household registration and the protection of public life. The urban-rural differences in the development of new urbanization in Weinan City are concentrated in the equity of the rights and interests of urban and rural residents, and the guarantee of labor power [22]. Firstly, it can be based on the actual situation of Weinan City, combined with the characteristics of different regions, specific analysis of specific problems, and gradually promote government policies to promote the equity of urban and rural residents' power, and to adopt policy inclination for special areas; secondly, attention should be paid to land use issues, and scientific and reasonable laws and regulations should be established to protect farmers' power.

5.2.2. Market Regulation

New urbanization has an important role in adjusting market demand and economic structure [23]. The urban-rural relationship is the most basic socio-economic relationship [24] and also an interactive and symbiotic relationship [25]. With the strengthening of urban-rural mobility, there is an urgent need to reduce the barriers between urban and rural markets [26], establish an integrated production and distribution network, and improve market mechanisms. In addition, there is a close connection between the development of new urbanization and the industrial structure in Weinan City, and with the outward movement of industry in urban areas, it is important to actively deal with the coordination between regions. For agriculture, we should vigorously promote the specialization and mechanization of agriculture, strengthen the propagation and training of advanced production technologies, improve agricultural production efficiency,

liberate surplus rural labor, and provide more labor resources for the development of secondary and tertiary industries; at the same time, provide facilitation in fiscal and market policies for high-tech innovation markets to encourage development. Developing agricultural specialty brands as well as township industrial groups, solving work problems for the surrounding population nearby, promoting local urbanization of the population, solving the real problems of farmers who cannot enter the city or return to their villages, grasping the people's food baskets, and enhancing market competitiveness. For the consideration of new urbanization, it is also important to focus on the complementary industrial structure of urban and rural areas.

5.2.3. Social Equity

In response to the semi-urbanization problem in the development of new urbanization in Weinan City, efforts should be made to improve the level of the means of social governance, expand the scope and population covered by social services, promote the residence permit system so that the non-resident permanent population can receive better population management and services, and provide the urban population with more comprehensive and equal social services and an ecologically livable living environment. It will improve the level and quality of services for the elderly, health and medical care, scientifically guide the sustainable development of Weinan City, establish an inclusive social security service system and social assistance system, provide economic and other support to the disadvantaged groups, and improve the inclusiveness of the town.

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