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Evaluation Study on the Level of High-Quality Development of the Construction Industry in Henan Province of China

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Abstract

Based on the data of the construction industry in Henan Province, China, from 2005 to 2020, the high-quality development level of the construction industry in Henan Province is measured. Firstly, this paper constructs the indicator system based on the high-quality development theory and the characteristic of the construction industry from seven dimensions: industrial scale, industrial efficiency, industrial benefits, industrial innovation, industrial risk, industrial potential, and the green development of the construction industry. Secondly, using the global principal component analysis (PCA) method to measure the high-quality development level. Thirdly, cluster analysis is applied to measure the relative changes of various dimensions in different stages. The results show that overall the high-quality development level of the construction industry in Henan province is increasing, but different indicators perform differently in various stages, and the changes in real estate policies have a significant impact on this. Finally, based on these findings, we think it is better to reduce real estate dependence, promote the application of new materials and technologies and maintain the stability of real estate policies.

Keywords

Construction Industry, High-Quality Development Evaluation

1. Introduction

Henan Province, located in central China, is a province in China with a total population of 99.4 billion people in 2020. In 2020, the construction sector in Henan Province generated a value-add of ¥528.331 billion, employed 2,876,700 individuals, and levied ¥45.417 billion in taxes. These figures constituted 9.42% of the province's GDP, 5.49% of its total employment, and 16.43% of its tax revenue. With its substantial contribution to employment, GDP, and taxes, the construction industry in Henan earns its place as a cornerstone of the province's economy. Meanwhile, other industrial sectors rely considerably on the construction industry to produce goods and services. For example, constructing infrastructure such as roads and bridges can facilitate the production of goods and services while creating employment opportunities for the people (Boadu *et al*., 2020) [1].

However, the construction industry in Henan currently faces significant developmental difficulties, such as sluggish growth, financial strain, heightened operational risks, and low labor productivity. Furthermore, uncertainties caused by fluctuating raw material prices, uncertain demand, shifting consumer expectations, inadequate waste management infrastructure, and misguided recycling techniques all lead to complexities in the construction industry (Aawag Mohsen Alawag *et al*., 2022) [2].

In the "14th Five-Year Plan" and beyond, high-quality development will be the dominant direction of economic and social development. Measuring the high-quality development level and exploring the future direction of development is of great practical significance. To promote the high-quality development of the construction industry in Henan Province, this paper constructs an index system including industrial scale, industrial efficiency, industrial benefits, industrial green, industrial innovation, industrial risk, and industrial potential, assessing the level of high-quality development with principal component analysis. Based on the local characteristics of Henan Province and the foundation of the construction industry, this paper innovatively incorporates industrial risk and potential into the indicator system. After measuring the overall high-quality development level, this paper conducts indicators' comparative studies on different stages with cluster analysis. We find a close relationship between the high-quality development of the construction industry in Henan Province and the changes in real estate policies. Through exploring the causes of changes in different stages from a temporal evolution perspective, this paper provides a reference for Henan Province to formulate construction industry development policies in response to changing times and circumstances.

2. Literature Review

This part compares and analyzes the literature from three aspects: the concept of high-quality development, the connotation of high-quality development in the construction industry, and the index system of high-quality development in the construction industry, respectively.

2.1. Concept and Connotation of High-Quality Development

Since the report of the 19th Communist Party of China National Congress made a significant judgment that China's economy has shifted from "a stage of high-speed development to a stage of high-quality development," academics have fully explored the connotation, theory, measurement, and practice of high-quality development.

High-quality development refers to a process of growth and improvement in an economy that prioritizes sustainability, inclusiveness, and resilience [3] (Zhang Jukuo, 2019). This development idea seeks to balance economic growth with social and environmental considerations, ensuring that economic progress's benefits are widely shared and do not come at the cost of long-term harm to communities or the environment [4] (Gao Peiyong, 2020).

High-quality development often involves diversity and innovation, education investment and workforce development, and the creation of supportive policies and institutions [5] (Liu and Ling, 2020). It also often prioritizes measures to reduce inequality and support disadvantaged communities, as well as efforts to transition to a low-carbon, environmentally sustainable economy [6] [7] (Zhou Shaofu and Chen Yahui, 2022; Bai Xiuyong, 2022). In short, achieving multidimensional goals is a distinctive feature of high-quality development.

2.2. Research on High-Quality Development of the Construction Industry

The construction industry is a pillar industry of the national economy. High-quality development of the construction industry has also attracted much academic attention. In the context of a globalized industrial world, organizations in the construction sector need to be more active in pursuit of higher quality to fulfill the consumers' demands and establish a long-term competitive advantage [2] (Aawag Mohsen, 2022). From the standpoint of fulfilling demands, Sun Jide (2019) [8] believed that the high-quality development of the construction industry must meet the needs of consumers and economic, social, and environmentally sustainable development. Wang Li (2020) [9] emphasized the flexibility and diversity of satisfying demands and believed that the high-quality development of the construction industry is oriented to satisfy the market demand and provides diversified, personalized, and high-quality products and services for the people in various means. From the perspective of "crisis impact", Gao Huajian (2021) [10] believed that under the dual constraints of technological progress and resource bottlenecks, the construction industry must adopt a higher quality, higher efficiency, more intensive, more environmentally friendly development model. Xiang Yong (2019) [11] argued that the high-quality development of the construction industry is the result of collaboration among the government, market, industry, and enterprises. Wang Zeyu *et al.* (2022) [12] also emphasized the crucial role of government governance in the high-quality development of the construction industry and believed that the improvement of the government's comprehensive governance capability in areas such as strategic planning, policy-making, institutional innovation, service provision, and market supervision is the foundation for the high-quality development of the construction industry.

2.3. Research on the Evaluation Index System of High-Quality Development

The high-quality evaluation index system is built upon a logical understanding of high-quality development [13] [14] (Li Jinchang *et al.*, 2019; Wang Wan *et al.*, 2022). The different understanding and measurement results in various evaluation indices. Concerning a specific industry, the index system is closely related to that industry's characteristics and development plan. As for the construction industry, there are differences in the design of the indicator system due to the study area's heterogeneity and the researchers' different focus.

Gao Huajian (2021) [10] used five dimensions, including the industrial foundation, construction products, social benefits, development pattern, and construction process, to measure the high-quality development of the construction industry. Yang Chengqian (2020) [15] used five dimensions: industry scale, industry efficiency, technology and equipment, industry efficiency, and development potential. Wang Wenzhao (2019) [16] constructed an indicator system based on the "Innovation, Coordination, Green, Openness, and Sharing" (ICGOS) development concept and measured the level of development with the TOPSIS method. Yang Deqin (2020) [15] incorporated the construction industry's development into the evaluation index system based on the ICGOS development concept.

2.4. Comments and Literature Gap

The existing literature has provided analytical ideas for this paper, but there are two shortcomings: first, the industrial and product attributes of the construction industry are ignored. The construction industry, especially the housing construction industry, provides products that have both essential and investment properties. Both supply and demand sides are highly dependent on bank credit funds and are greatly affected by finance, credit, and national industrial policies. Therefore, industrial risks must be fully considered. Secondly, the influence of the regional economic development level on the development of the construction industry is ignored. The development of the construction industry is closely related to economic growth, urbanization level, and increase in urban and rural residents' incomes [17] [18] [19] (Li Xianguang, 2007; Cao Linjian *et al.*, 2016; Wang Hongqiang *et al.*, 2022). Therefore, in assessing high-quality levels, we ought to consider the economy's expansion, the urbanization potential, and the increase in rural and urban residents' incomes. In this paper, two indicators of industrial risk and industrial potential are added to the indicator system. We hope that the indicator system and analysis results in this paper will provide a reference for the high-quality development of the construction industry in Henan Province, China.

3. The Connotation and Evaluation Index System

3.1. Definition of the Connotation

The connotation of high-quality development in the construction industry has not yet formed a unified cognition in the academic field. Based on existing literature and the situation of the construction industry, this paper believes that the connotation of high-quality development in the construction industry should include controllable risks, good productivity and economic efficiency, steady improvement in scale, green and innovative development, good resilience and development potential despite facing greater difficulties.

3.2. The Basis for the Construction of the Evaluation Index System

Based on the connotation of high-quality development and data availability, this paper constructs an evaluation index system containing industrial scale, industrial efficiency, industrial benefits, industrial green, industrial innovation, industrial risk, and industrial potential. Each indicator (see **Table 1**) and the selection basis are as follows.

1) Industrial Scale. The industrial scale refers to the size and output of a particular industry sector, often measured by its total production value or employment numbers. It reflects the level of economic activity and production capacity within that industry. In this paper, we choose the output value of the construction industry (A_1), the number of construction enterprises (A_2), the number of construction employees (A_3), and the total assets of construction enterprises (A_4) to measure the industrial scale.

2) Industrial Efficiency. Construction companies often have complex supply chains and construction processes, and ensuring that project equipment, products, and materials are produced without rework and efficiency is an ongoing challenge [20] (AlMaian *et al.*, 2015). The construction industry generally has a long production cycle. Regardless of the characteristics of the project, construction cost and schedule control are always considered to be the top priority in building construction [21] (Assaad *et al.*, 2020). Thus, construction efficiency (B_1) and completion efficiency (B_2) are selected to measure construction enterprises' start-up and completion efficiency, respectively. From the operation angle, the more efficient the enterprise is, the better it is at cost control. The main business cost rate (B_3) is selected to measure the management efficiency of the enterprise, and the total labor productivity (B_4) is selected to measure the overall production efficiency of the construction industry.

3) Industrial Benefits. Implementing total quality management in the construction industry can positively and directly impact project performance (Cherng-Yee Jong *et al.*, 2019). Industrial benefits include economic and social benefits. The profit rate of assets (C_1) is selected to measure the overall return on unit investment, the return on shareholders' equity (C_2) is selected to measure the return to investors, and the employment share (C_3) and the tax rate of output value (C_4) are selected to measure the social benefits.

4) Industrial Green. Construction production in the building industry requires a large amount of industrial raw materials, such as cement, steel, etc. These raw materials consume much energy and have a huge impact on the environment. If the construction industry wants to achieve green and sustainable

Table 1. Evaluation index system.

Tier 1 Indicators	Secondary indicators	Weights	Tertiary indicators	Unit	Characteristic	Weights
high-quality development of the construction industry in Henan Province	Industrial Scale (A)	0.3848	Industry output (A_1)	Billion	Positive	0.5059
			Number of enterprises (A_2)	individual	Positive	0.5009
			Number of employees (A_3)	individual	Positive	0.5042
			Total assets of enterprises (A_4)	Billion	Positive	0.4889
	Industrial Efficiency (B)	0.3957	Construction efficiency (B_1)	m^2/person/year	Positive	0.5664
			Completion efficiency (B_2)	m^2/person/year	Positive	0.5613
			Main operating cost rate (B_3)	%	Negative	0.2560
			Total labor productivity (B_4)	Yuan/person	Positive	0.5464
	Industrial Benefits (C)	0.3782	The profit rate of assets (C_1)	%	Positive	0.5126
			Return on shareholders' equity (C_2)	%	Positive	0.5091
			The employment share (C_3)	%	Positive	0.4750
			Profit and tax rate of output (C_4)	%	Positive	0.5024
	Industrial Green (D)	0.3598	Wood consumption per unit of output value (D_1)	Cubic meter/yuan	Negative	−0.4119
			Glass consumption per unit of output value (D_2)	Square meter/yuan	Negative	0.6113
			Cement consumption per unit of output value (D_3)	Ton/yuan	Negative	0.6192
			Energy consumption per unit of output (D_4)	Ton/yuan	Negative	0.2705
	Industrial Innovation (E)	0.3659	Technical equipment rate (E_1)	Yuan/person	Positive	0.5151
			Power equipment rate (E_2)	Kilowatt/person	Positive	0.4224
			The net value of own construction machinery and equipment (E_3)	Billion	Positive	0.5489
			Number of survey and design institutions (E_4)	individual	Positive	0.5049
	Industrial Risk (F)	0.3679	The capital indebtedness ratio (F_1)	%	Negative	−0.5323
			Current liability ratio (F_2)	%	Negative	0.5830
			The current asset ratio (F_3)	%	Positive	0.6138
	Industrial Potential (G)	0.3921	Fixed asset investment growth rate (G_1)	%	Positive	−0.4965
			Urbanization rate (G_2)	%	Positive	0.5011
			GDP per capita (G_3)	Yuan/person	Positive	0.5017
			Disposable income per capita (G_4)	Yuan/person	Positive	0.5006

development, it must improve the efficiency of raw materials and energy utilization. Academics generally measure industrial green in terms of steel, cement, and glass use per unit of output value [16] [22] (Wang Wenzhao *et al.*, 2019; Wu Xianghua *et al.*, 2021). However, because steel has the advantages of being lightweight, having good seismic resistance, easy construction, and recyclability, China government actively promotes steel structure buildings from the policy level. Therefore, this paper selects wood consumption per unit of output value (D_1), glass consumption per unit of output value (D_2), cement consumption per unit of output value (D_3), and energy consumption per unit of GDP to measure industrial green.

5) Industrial Innovation. Upgrades in machinery and equipment and advances in safety design concepts form the basis for innovation in the construction industry [23]. (Hsiu-Ping Chen and Kuo-Ching Ying, 2022) Under the established technology level, the innovation ability is derived from the design ability and technical equipment conditions. Thus, this paper selects technical equipment rate (E_1), power equipment rate (E_2), and the net value of own construction machinery and equipment (E_3) to measure technical equipment innovation ability. The number of survey and design institutions (E_4) is selected to measure the innovation ability of survey and design.

6) Industrial Risk. The environment of construction projects is complex and dynamic, with uncertainties. The construction industry is vulnerable to business risks [24] (Mhetre *et al.*, 2016). Small and medium-sized construction companies in developing countries suffer from a growing global trend of late and non-payment payments [25] (Peters *et al.*, 2019). This paper selects the capital indebtedness ratio (F_1) and current liability ratio (F_2) to measure the financial security of the construction industry and the current asset ratio (F_3) to measure its short-term solvency.

7) Industrial Potential. As the income of urban and rural residents increases, society and households have a higher demand for the products provided by the construction industry. This paper measures the industry potential from both supply and demand perspectives. The growth rate of fixed asset investment (G_1) is selected to measure the growth potential from the supply side. The urbanization rate (G_2), GDP per capita (G_3), and disposable income per capita (G_4) are selected to measure the growth potential from the demand side.

4. Evaluation of the Level of Quality Development

4.1. Method Selection and Evaluation Process

In this paper, the global principal component method will be used to evaluate the high-quality development of the construction industry in Henan Province. The basic idea of principal component analysis is to extract m ($m < n$) dimensional data from n-dimensional data with a strong enough correlation to represent the original data by means of dimensionality reduction while minimizing the information loss in the process of dimensionality reduction. The principal component analysis is applicable to cross-sectional data, but the data at different times lack comparability because they are in different main planes. Thus, this paper integrates the data of different years into a multidimensional data table and analyzes the data using global principal components analysis (GPCA). The specific calculation process is as follows.

Step 1: Construct a multidimensional data table. In Equation (1), T is the time, n is the number of samples, and p is the number of variables. We integrate data into a $T_{n\times p}$ panel.

$$X = \left(x_1, x_2, \cdots, x_p\right)_{T_{n\times p}} \tag{1}$$

Step 2: The matrix X is z-standardized to eliminate the effect of the magnitude. The covariance matrix of the normalized matrix is calculated, and its eigenroots and corresponding eigenvectors are found. Extract m principal components F_1, F_2, ..., and F_m with their eigenvalues greater than 1. The i-th principal component is calculated as shown in Equation (2).

$$F_i = X\mu_i \tag{2}$$

Step 3: The loading matrix V is obtained by calculating the correlation between the principal components and the variables. The coefficients β_i of the variables on the i-th principal component are obtained by dividing the i-th column of the loading matrix V by the arithmetic square root of the i-th characteristic root. Subsequently, the principal component scores are calculated.

$$f_i = X\beta_i \tag{3}$$

Step 4: The final calculation of the composite score. In Equation (4), λ_i is the i-th feature root, q is the sum of the extracted feature roots, and f_i is the score of the i-th principal component

$$F = \sum_{i=1}^{m} \frac{\lambda_i}{q} * f_i \tag{4}$$

4.2. Data Sources and Processing

4.2.1. Data Sources

The construction industry data of Henan Province from 2005-2020 were used, and the data were analyzed using Stata17, which was derived from the China Construction Industry Statistical Yearbook and China Statistical Yearbook from 2006-2021.

4.2.2. Variable Correlation Test

Before conducting principal component analysis, correlation tests between variables need to be verified. KMOs were all greater than 0.7, while Bartlett's spherical test was significantly 0.0000, indicating that global principal component analysis could be performed. The principal components were extracted with the criterion of the characteristic root greater than 1. The characteristic root and variance contribution of the principal components extracted are shown in Table 2.

4.2.3. Determination of Index Weights

After extracting the principal components, we get the weights of the third-level indicators under each second-level indicator. Then, we calculate the second-level

Table 2. Table of principal component eigenvalues and variance contributions.

Secondary indicators	Principal Components	Feature Root	Explanation of variance	Cumulative variance explained
Industrial Scale	Component 1	3.8492	0.9623	0.9623
Industrial Efficiency	Component 1	3.0080	0.7520	0.7520
Industrial Benefits	Component 1	3.4294	0.8574	0.8574
Industrial Green	Component 1	2.2104	0.7368	0.7368
Industrial Innovation	Component 1	2.9551	0.7388	0.7388
Industrial Risk	Component 1	2.4347	0.8116	0.8116
Industrial Potential	Component 1	3.9639	3.93233	0.9910

indicators' scores to obtain the second-level indicators' weights. The weights of the secondary and tertiary indicators are shown in Table 1.

4.2.4. Score Measurement

After obtaining the weights of secondary and tertiary indicators, the scores of each secondary indicator and the final comprehensive score were calculated after weighting, as shown in Table 3.

5. Discussion

As can be seen from Figure 1, the high-quality development of the construction industry in Henan Province presents the following two characteristics.

First, the overall score shows a fluctuating upward trend, which indicates that the level of high-quality development of Henan Province's construction industry is continuously improving.

Secondly, in the indicator score, the industrial scale and risk score are basically in a stable upward trend; green indicators show an upward spiral trend, while industrial efficiency, industrial benefits, and industrial innovation scores are in a five-year phase, in a stepped, spiral upward trend. After 2016, The above three indicators are in a downward trend. In 2016, the Chinese government implemented real estate regulation policies to cool down the overheated housing market and control housing prices. These policies included stricter requirements for down payments, higher mortgage interest rates, and limits on property purchases in certain cities. Real estate accounts for about 60% of the proportion of the construction industry output value in Henan Province. Real estate regulation policies may be the main reason for the lower trend of the three indicators.

5.1. Cluster Analysis of High-Quality Development in Henan Province

In order to study the stage characteristics, we use cluster analysis to cluster the samples at the longest distance and generate a cluster spectrum (Figure 2). As seen in Figure 2, we divided the research cycle (2005-2020) into four phases.

Table 3. Final composite score.

Year	Size Score	Efficiency Score	Benefit Score	Green Score	Innovation Score	Risk Score	Potential Score	Overall Score
2005	−3.1472	−3.0356	−3.8855	−2.9671	−2.4466	−2.3798	−3.0978	−4.5196
2006	−2.9037	−2.5814	−3.3854	−0.6934	−2.1111	−2.1003	−2.6302	−3.4637
2007	−2.2294	−2.0335	−2.4022	−0.6689	−1.9834	−1.6065	−2.3367	−2.8066
2008	−1.5831	−1.5106	−1.0999	−0.9451	−1.5267	−2.3796	−1.8092	−2.3843
2009	−1.0669	−1.5765	−0.8239	−1.3736	−1.2911	−1.2730	−1.5746	−1.9807
2010	−0.7141	−0.9844	0.3920	−0.9234	−1.0852	−1.0959	−0.8928	−1.2089
2011	−0.5498	−0.4294	0.3698	−1.0576	−0.4698	0.4652	−0.7190	−0.5058
2012	−0.3801	0.4963	0.3656	−0.7679	−0.1770	0.9990	−0.1707	0.1175
2013	0.1849	1.2661	1.4006	−0.3582	0.3587	1.0813	0.0863	0.8453
2014	0.3870	1.7987	0.5512	−0.2250	0.6617	1.5818	0.5281	1.1652
2015	0.6246	1.2540	0.5820	0.8740	3.0635	0.7958	0.9460	1.7502
2016	1.0230	2.2759	2.2531	2.1132	2.7562	1.1542	1.3938	2.6959
2017	1.7041	2.0181	1.7519	1.8803	2.3135	1.2734	1.9168	2.7141
2018	2.4484	1.3433	1.4798	1.9473	1.1433	−0.2104	2.3750	2.2589
2019	2.9060	0.9694	1.8799	1.1721	0.3991	1.7087	2.8509	2.6016
2020	3.2964	0.7295	0.5711	1.9934	0.3950	1.9862	3.1340	2.7210

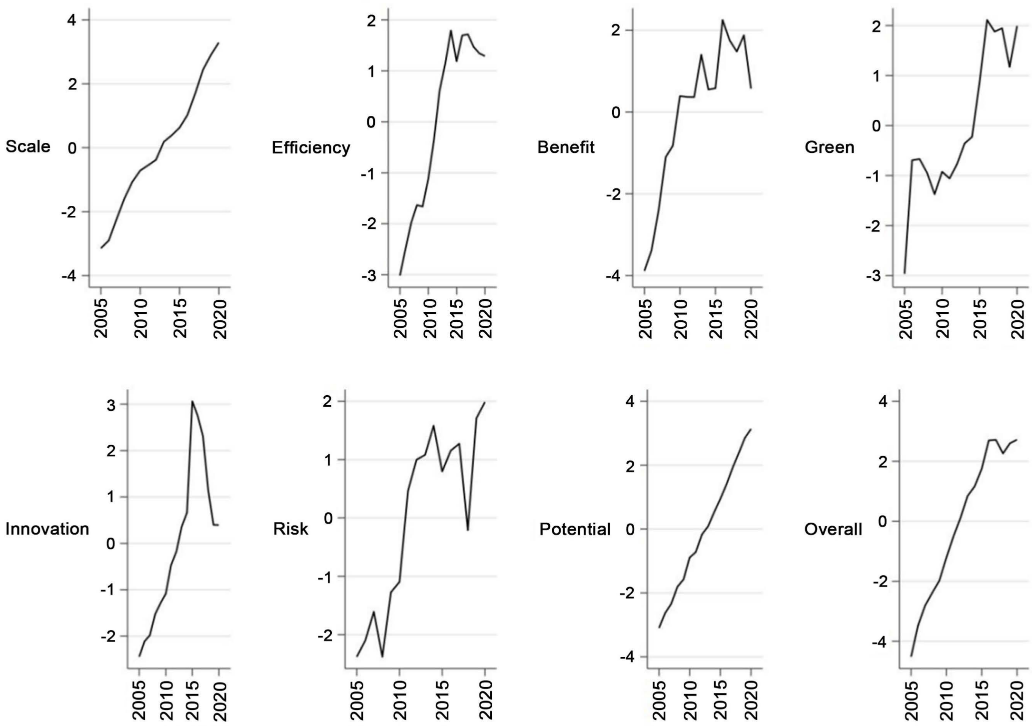

Figure 1. High-quality development analysis.

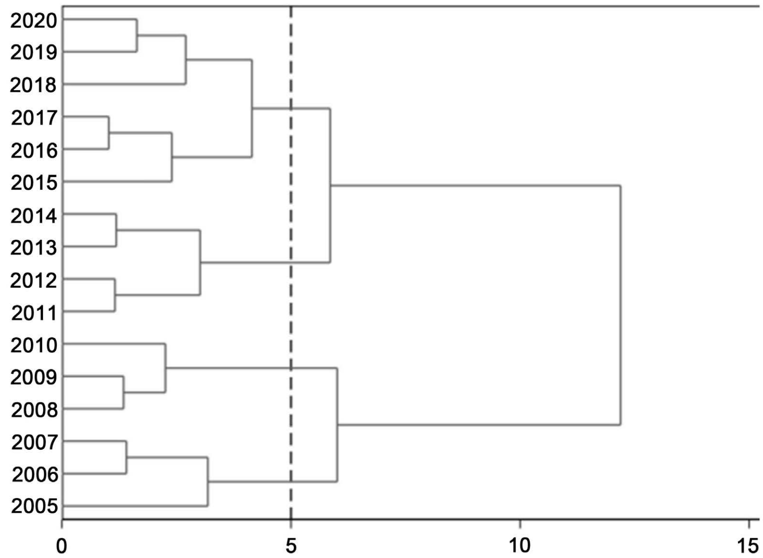

Figure 2. Cluster analysis chart.

The first stage is 2005-2007; the second is 2008-2010; the third is 2011-2014; and the fourth is 2015-2020. We ranked the secondary indicators based on the average scores under the different stages (**Table 4**).

By combining **Table 4**, we will analyze the causes of the stage characteristics based on the real estate policy. According to Chen Yingnan *et al.* (2022) [26], China's real estate policy adjustment has the following characteristics. When economic growth faces greater difficulties, macro-control promotes real estate consumption. And when housing prices rise too fast, macro-control tends to inhibit the development of the real estate industry. Therefore, the frequent adjustment of the real estate regulation and control policies on the development of the construction industry has caused a greater impact.

The first stage is from 2005-2007. At this time, Henan's construction industry was still in the initial development stage, the overall scale of the industry was small, and the impact of construction industry development on the environment was limited. At this stage, the industrial scale and industrial efficiency of the construction industry in Henan Province ranked sixth and seventh, respectively, and the industry ranked first in green.

The second stage is from 2008-2010. In 2008, the Chinese government announced an economic stimulus plan worth 4 trillion yuan to counter the impact of the global financial crisis on the Chinese economy. The plan aimed to stimulate economic growth by increasing domestic consumption and investment. Specifically, the plan included measures in areas such as infrastructure construction, rural economic development, housing construction, and environmental protection. Henan Province's construction industry output value increased from 282.406 billion yuan in 2008 to 440.061 billion yuan in 2010, with an average annual growth rate of 27%. Indicators closely related to industrial benefits, such as profits and taxes, grew by 42% and 30%, respectively. Thus, industrial benefit ranks first during this period. However, the loose financial credit policy allows

Table 4. Ranking order and changes of each dimension at different development stages.

Stage	Ranking by stage						
	Industry Scale	Industry Efficiency	Industry Benefits	Industry Green	Industrial Innovation	Industry Risk	Industry Potential
I	6	4	7	1	3	2	5
II	3	6	1	2	4	7	5
III	6	2	3	7	4	1	5
IV	2	5	6	4	3	7	1

construction industry companies to be more aggressive in financing. The capital indebtedness is relatively high, so the industry risk ranked seventh, and construction companies have a higher risk.

The third stage is from 2011-2014. In 2011, the government realized the danger of overheated housing prices, lowering the reserve requirement ratio six times and raising the benchmark RMB lending rate four times. However, the previous large-scale economic stimulus's inertia still kept house prices rising. During this period, the scale, profit, and tax growth of the construction industry in Henan Province performed relatively well. The growth rate of the construction scale was 20%, 14%, and 17%, respectively, over these three years; the growth rate of profits was 24%, 16%, and 34%, respectively; and the growth rate of taxes was 14.3%, 13.8%, and 22.1% respectively. In 2013, the Chinese government formally introduced the "New Five National Policies," a real estate regulation and control policy. The "New Five National Policies" include strengthening regulation, stabilizing property prices, curbing speculation, and increasing supply, which is an update and strengthening of the previous real estate regulation policy. As a result, during this period, thanks to the strong regulation and control policies, the industry ranked first in terms of risk, and the industrial risk situation was significantly improved, while industrial efficiency, industrial benefit, and industrial innovation also ranked high.

The fourth stage is from 2015-2020, in which the real estate market regulation policies frequently shifted. In 2013, the "New Five National Policies" led to a drop in housing prices, but in 2014, the Chinese government began using mild measures such as credit incentives and subsidies to stimulate demand. In 2015, the Chinese government heavily promoted the "Monetization of shantytown resettlement," which solved housing renovation and demolition problems through monetary means and actively helped the real estate industry to reduce inventory. From September to October 2016, housing prices in first and second-tier cities rapidly rose, and the government introduced the "Housing for Living, Not Speculation" concept for market regulation. This concept posits that houses are meant for living, not for speculative trading. During this stage, the profit and tax revenue growth rates of the construction industry in Henan Province were volatile. In 2016, the profit growth rate was 37%, but in 2020 it decreased to −8%, and the tax revenue growth rates from 2015 to 2020 were −1%, 27%, 16%, 25%,

−4%, and −6%, respectively. As shown in the table below, despite the industry ranking second in scale during this stage, it ranked sixth and seventh in industry efficiency and risk, respectively, due to the frequent shifts in real estate regulatory policies.

5.2. Analysis of the Structure of the Construction Industry

Structural adjustment is an essential aspect of the high-quality development of the construction industry. The construction industry encompasses housing construction, civil engineering construction, building installation, building decoration, and other construction. **Table 5** shows the internal structure of the construction industry in China, Henan Province, and Hubei Province from 2005 to 2020. Hubei province was chosen as a reference subject because its construction industry labor productivity ranks first nationwide. In 2020, its construction industry labor productivity was 702,079 yuan/person, significantly higher than the national average of 422,898 yuan/person. The labor productivity in Henan's construction industry was 423,307 yuan, roughly equivalent to the national average.

As can be seen from **Table 5**, the proportion of the housing construction industry in Henan province is significantly lower than the national average level and Hubei province. In the fields of civil engineering construction, building installation, and building decoration, the corresponding indicators in Henan province are higher than the national average level and slightly higher than Hubei province. A high proportion of the housing construction industry would make it too dependent on the real estate industry, making it more vulnerable to the influence of real estate market conditions and policy regulation, which is not conducive to high-quality development. In today's "housing is not for speculation," Henan province's lower proportion of housing construction business is conducive to the construction industry getting rid of its dependence on real estate. At the same time, the increasing proportion of building installation and decoration also points to the direction for the construction industry to find new growth points. This part shows the advantages and development potential of the structure of the construction industry in Henan province. With the further development of the economy, especially the development of new infrastructure, the construction industry outside of the housing construction industry will face more development opportunities.

6. Conclusions and Recommendations

6.1. Reduce Real Estate Dependence

The fluctuations in the real estate market deeply affect the high-quality development of the construction industry in Henan province. The construction industry in Henan must reduce its dependence on real estate, explore new business growth points, fully tap into the construction industry's potential, and enhance the resilience of the construction industry's development. Henan province has a

Table 5. Internal structure of the construction industry.

Business Structure	Region	2005	2010	2015	2020
Percentage of housing construction (%)	China	59.45	58.44	64.15	61.33
	Henan Province	49.42	45.78	53.26	55.74
	Hubei Province	54.20	45.51	59.16	59.24
Percentage of civil engineering (%)	China	27.04	29.11	25.59	28.55
	Henan Province	31.75	40.84	35.00	32.15
	Hubei Province	34.71	41.40	32.98	35.63
Percentage of building installation (%)	China	8.47	7.53	5.45	5.33
	Henan Province	14.70	8.12	5.96	6.17
	Hubei Province	5.78	9.45	4.74	3.04
Building decoration and other (%)	China	5.04	4.93	4.81	4.79
	Henan Province	4.13	5.26	5.79	5.93
	Hubei Province	5.31	3.64	3.12	2.10

large population and a massive housing stock, and there is a strong demand for the transformation and decoration of living environments. In the context of "Housing for Living, Not Speculation," the construction industry in Henan province should actively innovate its production and service models, flexibly meet the diversified and personalized demands of the people for the transformation and decoration of their living environments, and advance high-quality development through multiple businesses.

6.2. Encourage the Application of New Materials and Technologies

Innovation is an important element of high-quality development [27] [28]. In the context of "Carbon Peak, Carbon Neutral," efficiency improvement, energy saving, and environmental friendliness are essential elements of high-quality development of the construction industry, as well as the basic preconditions for the sustainable development of the construction industry. Therefore, the government should encourage construction enterprises to use environmentally friendly materials and apply intelligent technologies such as the Internet of Things, artificial intelligence, big data, and cloud computing to the production chain.

6.3. Maintain the Stability of Real Estate Policies

Since the economic work conference in December 2016, the real estate regulation policies centered on the theme of "housing for living, not speculation" have conveyed stable policy expectations. Since 2022, the economy has faced more tremendous pressure due to changes in the international situation and the impact of the COVID-19 pandemic. There are signs of relaxation in the government's macroeconomic regulation policies for the real estate industry, and Henan plans to continue implementing "Monetization of shantytown resettlement" in the next three years. It is reasonable to adopt a flexible policy response in special times, but frequent and aggressive adjustments to real estate policies can easily lead to uncertainty and risk, which is not conducive to the long-term healthy development of the construction industry. Therefore, the government should adopt a gradual approach to adjust its policies to ensure the stability of the real estate policy.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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